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University of Vermont Housing: Motivations Behind Institutional Sustainability Transitions

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Abstract

This thesis surveys the motivating factors behind transitions towards sustainability in the University of Vermont's student housing. In conducting this research, I take into consideration the existing perspectives between different stakeholder groups affected by student housing transitions in Burlington. The main stakeholder groups were identified as students of the University of Vermont, faculty and staff at the university, community members living in neighborhoods surrounding the university campus, City Council members serving the City of Burlington, and landlords who own properties where students currently reside off-campus. These groups were targeted with unique surveys which were used to identify perspectives associated with the construction of an environmentally friendly dormitory on a brownfield in Burlington. The objective of my research is to highlight social trends in support of increased investment in institutional sustainability improvements to mitigate climate change at UVM. This project has the potential to build an understanding of housing relationships between UVM and Burlington, and offers insights into the pathways towards establishing sustainable housing environments for UVM students. This is especially important in the context of the University of Vermont, which prizes its reputation as a "green" university at the forefront of institutional environmental innovation. After survey data was collected, it was important to acknowledge this gathered information as preliminary, with many more perspectives still to be uncovered and large proportions of stakeholder groups left to be investigated. It will remain meaningful to view these findings both as a symbolic gesture and as a practical effort to guiding real-world adaptations to our ongoing climate crisis, and the role that UVM may be able to play in promoting equitable, sustainable housing options.

1. Introduction

The influences of climate change, although spanning a global scale, trickle down to communities everywhere across the planet (Karl et al., 2009). Being that Burlington, Vermont is no exception, the city must begin taking into account the large array of potential mitigative and adaptive solutions to keep its citizenry safe and resilient. The University of Vermont has positioned itself as a leader on the topics of the environment and sustainability within higher education. While UVM recently announced its divestment from fossil fuels in response to organized student efforts, the opportunity to continue to improve the university's own ecological footprint remains. Students who may aspire to lead fossil fuel-independent lifestyles are confined to the existing accommodations of UVM, especially in terms of housing options both on- and off-campus. These interconnected issues of environmentalism and socioeconomic welfare connect to the more city-specific problem of housing accessibility and sustainability that Burlington is forced to deal with in conjunction with climate-related crises. Encroachment of students into neighborhoods bordering campus over years past has disrupted the availability of housing to long-time residents of Burlington. Not only does this lead to imbalances in housing availability for working, non-student adults, but also allows UVM to avert accountability it may hold in ensuring that off-campus students live healthy, safe, and environmentally responsible lives.

This thesis explores the complex nature of housing, sustainability, and the roles of key stakeholders in promoting housing advancements at the city level. I have been working alongside Professor Paul Bierman of the UVM Geology Department to develop a concept for an environmentally and socially sustainable dormitory operated by the University of Vermont. This concept will be proposed as a method by which students will be able to accept and act on their

responsibility to steward the environment, while also preventing themselves from infringing on the housing stock available to long-term city residents or workers. A preliminary concept for this housing environment will include radically innovative technology that will allow the building(s) to operate as carbon neutral. Furthermore, attractive amenities such as on-site dining and exercise facilities will be included as part of the concept. It is our ultimate hope that these added layers of attractiveness will entice students to this new living community from their potential living situations off-campus, thereby reducing the flux of students into surrounding neighborhoods and allowing UVM to reign in the carbon footprints inherent to the lifestyles of its off-campus student population. If carried out successfully, such a housing project at UVM could contribute to the university's status as a leader in the fields of the environment and sustainability.

Climate change and housing affect the Burlington community in an overarching manner that is not well understood solely through a student perspective. As a tactic to accurately ground this project in the social and environmental context of Burlington, I have engaged with other community members throughout the city to acquire a greater understanding of the perspectives that play into the housing and environmental plans of UVM. Learning from the discussions I had with individuals in the community such as Mayor Miro Weinberger, Senator Chris Pearson, City Councilor Jack Hanson, and real estate agent Sandy Wynne, I gained some insights into ways I could begin to classify distinguishable target groups in my study who all have valuable perspectives and motives regarding housing. These groups are inclusive of students, faculty and staff at UVM, City Councilors, neighborhood residents, and landlords who own current student housing in off-campus neighborhoods. Finally, I provide a commentary on the initial survey findings and their symbolic significance in guiding UVM towards higher sustainability standards.

2. Literature Review

2.1. Trends of University Student Housing in the United States

2.1.1 On-Campus Housing

On-campus housing has the potential to increase enrollment retention among college students (Wode, 2018). Not only do on-campus living accommodations foster an environment of enrollment commitment, but on-campus students' actual performance levels in terms of grades and critical thinking skills are shown to be higher and more refined than their off-campus peers (Wode, 2018). Further supporting the relationship between on-campus housing and student well-being is students' increased likelihood to receive social support and facilitation of interpersonal partnerships in dormitories (Schudde, 2011). Being constantly exposed to students with similar experiences in an institution may help to combat stress, sense of isolation and anxiety, and consequent dropout rates (Schudde, 2011). Furthermore, fuller immersion in the "college experience" is argued to be linked to statistically higher rates of graduation among students (Schudde, 2011). Bozick (2007) explains how the pressures that first-year college students face in maintaining their enrollment at institutions for higher education relate to second-year enrollment. Students who are less economically stable are more likely to live at home their first year of college rather than seeking on-campus living arrangements, thereby becoming less likely to enroll in their second year due to lack of full integration with the school environment (Bozick, 2007). In fact, as described by de Araujo and Murray (2010), institutions of higher learning use on-campus student housing as a means through which to increase the likelihood of continued enrollment among their student bodies.

Following the end of the Second World War and the return of veterans to the United States, many large universities across the nation received federal funding to build additional student housing that would absorb returning students (McBride, 2017). Although these previously constructed dormitories have stood through the years, they are beginning to fall into disrepair (McBride, 2017). This comes at a time when

state funding for universities is decreasing, and student preferences for housing are more tailored to apartment-style living (La Roche et al., 2010). In 2011, a record high number of 21.6 million students were enrolled in colleges and universities in the United States, with enrollment rates increasing by 40% since the year 2000 (Ong, Petrova, & Spieler, 2013). With increased enrollment comes increased housing demand, and ultimately the significant influence on decisions of institutions to build more dormitories (Ong et al., 2013). Increased enrollment also comes with increased diversity, and "universities are recognizing the importance of creating residential facilities that assimilate into an active campus and community life" (Martin & Allen, 2009, pp. 36-37).

In recent years, amenities provided to college students have become increasingly luxurious, and institutions feel obligated to create fancier living environments for their students as they face pressing competition from other institutions following similar trends (Martin & Allen, 2009). In fact, students themselves expect a level of extravagance in their housing accommodations. A Student Housing Survey distributed at Longwood University in Virginia focused on the main aspects of living arrangements that were either deemed "very important" or "somewhat important" by students (La Roche, Flanigan, & Copeland Jr, 2010). This revealed that private bedrooms, onsite parking, and double beds were considered of utmost importance, acknowledged as such by 95.5%, 92%, and 91.3% of students, respectively (La Roche et al., 2010).

2.1.2 Off-Campus Housing

According to the US Department of Education, approximately two-thirds of university students live off-campus (Apsokardu & Sewalk, 2016). As enrollment rates at American universities are expected to increase by 14% between 2011 and 2022, the housing stock made available to students on-campus is projected to decrease significantly (Apsokardu & Sewalk,

2016). Academic institutions already are highly dependent on private housing markets to accommodate their student populations (Delgadillo & Erickson, 2006). This aligns with a 7% growth rate in off-campus student housing rental rates between the years 2004 and 2006 across 64 American college towns (Ong et al., 2013). Off-campus student housing has therefore become a booming business in the wake of increased enrollment rates that exceed dormitory capacities (Ong et al., 2013). These markets are described by Johnson, Cole, and Merrill (2009), as being "less than ideal," as they constitute apartments and low-quality homes with frequent tenant turnovers, resulting "in carelessness in the cleanliness and upkeep of the structure and living environment by both the students and management" (Johnson, Cole, & Merrill, 2009, p. 43). Survey results of Brigham Young University students living in off-campus housing showed that health and safety standards are often not prioritized within their living environments, and serves as a guideline for establishing healthier housing for college students in homes not owned by institutions (Johnson et al., 2009).

Delgadillo and Erickson (2006) cite a study in which college student identity and demographics were shown to have little impact on the level of satisfaction that students experienced with their living environments. Instead, more important factors included community cohesion and friendliness, safety, and noise (Delgadillo & Erickson, 2006). A paper observing existing student housing trends in the Netherlands used the metric of human values as opposed to demographic differences, inclusive of "standards held by a person, culture, or religion, which are responsible for the selection and maintenance of goals and regulating the way in which these goals are attained," to assess housing preferences of students (Nijënstein, Haans, Kemperman, Borgers, 2015, p. 200). Of course, as Dutch demographic composition is quite homogeneous (Nijënstein et

al., 2015), especially in comparison to the United States, diversity of opinions among different student groups should not be dismissed in the context of housing preferences.

Aside from simply student demographics, off-campus student housing also has the potential to affect overall urban geographies and demographics (Ong et al., 2013). This is apparent in the fact that 107,000 college students live off-campus in the Boston area, occupying a total of about 20,000 housing units of approximately 250,000 in the entire city - almost 10% of the city's total available housing (Ong et al., 2013). However, due to their heavy demographic influences on the communities in which they live, students may also present opportunities of progressive transitions to their communities. A study involving students at Oberlin College sought to address a gap in the knowledge concerned with student engagement with the towns where they live (Daneri, Trencher & Petersen, 2015). Particularly as related to sustainability endeavors, students were able to effectively engage in learning and active participation within their communities through activities such as project-based learning, internships, and research projects (Daneri et al., 2015).

2.2 Important Attributes for Students in Living Accommodations

2.2.1 Cost

Some students who would otherwise be able to live off-campus indicate that they hold on-campus living in higher regard for the level of convenience (Cheskis-Gold & Danahy, 2012). This is under the circumstances that they would be allowed a higher amount of independence and affordable costs for living expenses (Cheskis-Gold & Danahy, 2012). Furthermore, students commonly believe that off-campus accommodations usually connote flexible lease periods,

although the opposite is true, given that most lease periods extend for an entire year (Li, Sheely, & Whalen, 2005).

Broton and Goldrick-Rab (2013) argue that "housing can serve as a stable 'platform' from which to launch additional positive social and economic outcomes, including education" (p. 1). They also argue that stability of student housing is of particular value to individual students, because in their transitions to adulthood, housing serves as a grounding force in developing "self-sufficiency goals related to postsecondary education or employment" (Broton & Goldrick-Rab, 2013, p.1). Broton and Goldrick-Rab (2013) also alluded to housing security present in certain student populations. In observing the City University of New York system, it was revealed that 42% of surveyed students identified as housing insecure. Many students also stated that most of this insecurity stemmed from either lack of money to pay rent, or hikes in rental rates that made monthly payments unrealistic and unattainable (Broton & Goldrick-Rab, 2013). Conversely, "studentification" of neighborhoods, or the replacement of long-term community residents by influxes in student populations, may have adverse effects for non-student citizen housing (Kinton, Smith & Harrison, 2016). However, a UK study pointed out that negative impacts that result from studentification of neighborhoods may fuel sustainable construction on university campuses, motivating students to move back closer to their schools (Kinton et al., 2016).

2.2.2 Convenience

Surveys conducted through the CUNY schools indicate that generally, students would prefer to live on campus given the convenience of dormitory lifestyles (Ong et al., 2013). However, in the event that on-campus housing would not be available, students would prefer off-campus housing closer to the institution (Ong et al., 2013). Not only are residence halls generally in closer

vicinity to academic buildings, but off-campus housing that is closer to campus is also usually more expensive (Li et al., 2005). In addition to proximity to campus, fast internet connections and ability to choose one's place of residence fall under the umbrella of convenience, and both contribute strongly to the satisfaction that students experience within their housing environments (Li et al., 2005). Meanwhile, leadership opportunities were described as the second most important factor in the decision to remain on campus (Li et al., 2005). In a Malaysian study on the differing experiences of students in on- versus off-campus housing, convenient distances to campus combined with lavish amenities in off-campus residencies is shown to create competition between universities and off-campus housing markets to attract the most students (Muslim, Karim, & Abdullah, 2012).

2.3 Need for Sustainability in Burlington, Vermont

2.3.1 Vermont Climate Action Plan

States are key actors in the development of climate legislation and action plans because of inaction on behalf of the federal government to curb greenhouse gas emissions, and because of states' inability to agree on mutual goals for emissions reductions based off conflicting social, political, and economic endeavors of each state's population (Pollak, Meyer, & Wilson, 2011). Pollak et al. (2011) show that by calibrating the frequency of objectives present in a number of states' climate action plans, efficiency and conservation are the most prevalent goals to curb greenhouse gas emissions. As a subsection of this goal, building efficiency appears as the most popular to strive for, accounting for 28.1% of eleven states' greenhouse gas emissions reduction strategies between the years 2020 and 2025 (Pollak et al., 2011).

The Vermont Climate Action Plan highlights the necessary measures that must be taken by the state in order to comply to the needs of fossil fuel independence in the face of climate change (Vermont Natural Resources Council, 2019). This suggests practices that Vermonters can incorporate into their lifestyles to reduce their environmental footprints (Vermont Natural Resources Council, 2019). The main goals to date are to increase home weatherization rates, create electric vehicle incentive programs, join other New England states to create a Global Warming Solutions Act, expand renewable energy networks, reduce overall carbon emissions across all sectors of the economy, and prohibit the expansion of fossil fuel infrastructure (Vermont Natural Resources Council, 2019). The Vermont Natural Resources Council (2019) argues that while Vermont's goals for its energy future in a fossil fuel-free context are very ambitious, they are necessary for both the environmental and economic betterment of the state. While Vermont continues to consume unsustainable energy sources, eight of every ten dollars spent on fossil fuels leaves the Vermont economy (Vermont Natural Resources Council, 2019).

2.3.2 Burlington Climate Action Plan

With extended growing seasons, more extreme temperatures, and disrupted levels of precipitation, Vermont is already feeling the effects of climate change, and the City of Burlington has put forth a plan to protect the state's recreation and tourism industry, forested lands and agriculture, human health, and infrastructure (City of Burlington, 2014a). In viewing the emissions history of Burlington, it is clear that the recent years have seen stagnation in progress towards reducing greenhouse gas emissions. From 2010 to 2013, although overall emissions decreased by about 1,000 tCO2e, natural gas emissions continued to increase from 124,502 to 126,298 tCO2e (City of Burlington, 2014b). It is important to recognize the climate action plan's attempts at

upholding standards of equity in the movement towards fossil fuel independence. Housing is a means through which equity is most likely to become visible, but only if Vermonters are able to afford the necessary adaptations that climate change will mandate, and if they can access energy-efficient homes in terms of heating, cooling, and weatherization infrastructure (City of Burlington, 2014a).

City-level climate action plans originated as a response to the Brundtland Commission's promotion of sustainable development and the concept of thinking globally while acting on a local scale (Boswell, Greve, & Seale, 2010). In a report assessing the efficacy of the California State Climate Action Plan, it is argued that the ambitious goals that the state set for itself in reducing its emissions rates by 80% below 1990 levels by 2050 cannot be met without the help of local climate action plans (Hui, Smith, & Kimmel, 2019).

By conducting a content analysis of various US cities' climate action plans, Boswell, Greve, and Seale (2010) aimed to identify if local climate action plans were apt to solve the issues faced by the various communities. Their findings showed that while many cities aim to improve their environmental performance, many fall short of success either because they set their goals too low or fail to act in accordance with their proposed cuts of emissions (Boswell et al., 2010). Furthermore, many climate action plans are expected to be reviewed and updated as the year 2020 comes to an end, representing the deadline by which many emissions reductions goals must be met (Hui et al., 2019). This holds significance for the City of Burlington in that it may raise the alarm as to necessary actions to be taken in the face of slowed response to climate impacts. According to the city's climate plan, emissions have increased in government operations, at the airport and

within the community by 15%, 3%, and 6% between the years 2007-2010, respectively. Specifically within the community, 44% of greenhouse gas emissions were attributed to transportation in 2007 and increasing to 51% in 2010. This pays tribute to the need for reducing vehicle use in Burlington, as it could most significantly move the city towards its emissions reductions targets (City of Burlington, 2014a).

Given many common environmental shortcomings, institutional entities such as college and university city planning departments are urged to act more swiftly in educating professionals to address the climate crisis through city planning (Boswell et al., 2010). After a history of relative inaction in providing its students with ways to combat the climate crisis themselves and taking appropriate steps to fight the crisis at an institutional level, UVM may take up the charge in developing mitigative and adaptive strategies to coping with climate change, through its housing options for instance.

2.4 Housing Issues and Strategies in Burlington

2.4.1 Burlington's Housing Crisis

The City of Burlington, Vermont Downtown Housing Strategy Report (2014) discusses how Burlington is undergoing an affordability crisis where an average of 44% of citizens' income goes to housing-related costs in the city center. Despite high housing demand and influxes of students and others into the city, very few new apartments have been built, only a handful of which are at the market rate. This creates not only a supply issue, but also an equity issue in terms of accessibility to affordable housing within the city ("City of Burlington, Vermont Downtown Housing Strategy Report," 2014). Other factors that contribute to the housing market's poor state

are that rent costs are rapidly increasing while wage growth is remaining relatively stagnant in comparison, the state faces high development costs, and that Vermont has seen a decrease in issuance of building permits in recent years (Syed, 2020).

Of course, the dynamics of housing affordability and accessibility are inseparably linked to the presence of UVM students taking up a significant part of the city's housing supply. Perhaps most important to recognize is the fact that housing in the city has become increasingly expensive as the supply of new units has fallen behind rising level of demand, which, in addition to resulting from increasing population, is also due to inadequate capacities for on-campus student housing in the city ("City of Burlington, Vermont Downtown Housing Strategy Report," 2014).

As the Downtown Housing Strategy Report (2014) states, "the typical renter household needs 1.6 full-time jobs paying the average renter wage to afford a two-bedroom apartment at a Fair Market Rent (FMR) of $1,029 per month. This challenge is particularly acute in high demand employment centers, such as downtown Burlington, where average market rents for a two-bedroom apartment are nearly twice the FMR rate" (p. 5). However, given that this information is several years outdated, the FMR in Vermont for 2020 has risen to $1,573 per month for a 2-bedroom apartment ("Burlington-South Burlington Fair Market Rent," 2020). Meanwhile, the Downtown Housing Strategy Report claims that from 2010-2011, an estimated 52.9% of students at UVM were believed to be living off-campus ("City of Burlington, Vermont Downtown Housing Strategy Report," 2014). As students are often in competition over housing with other Burlington residents, particularly in the neighborhoods closer to campus ("City of Burlington, Vermont Downtown Housing Strategy Report," 2014), these two issues coupled together create an

overarching issue of accessibility that UVM plays an integral role in addressing and helping to alleviate by bringing its students back onto campus.

In a letter written to Mayor Miro Weinberger on behalf of University Relations, Thomas Gustafson (2014) elaborates upon the nature of the relationship between the university and the city in terms of housing, taking the form of a formal response to the 2014 Downtown Housing Strategy Report. In the letter, he argues that UVM has increased its on-campus housing requirements for the first two years of enrollment, more rigorous in comparison to other institutions of similar caliber across the US who do not have stringent housing requirements. Extending requirements any further, Gustafson (2014) says, would probably negatively impact the institution as off-campus living is a major draw for students. In fact, area colleges and universities are argued to have already made progress in acknowledging the need to accommodate student housing demand, as seen in UVM's partnership with a private developer in 2013 to construct Redstone Lofts ("City of Burlington, Vermont Downtown Housing Strategy Report," 2014).

The Housing Report states that 52.9% of UVM students live on-campus. However, University Relations disagrees, saying that number is affected because it includes graduate students. Otherwise, they argue the proportion of students living on-campus would be around 63% if only accounting for undergraduates (Gustafson, 2014). In the context of this project, it is important to gain an encapsulating perspective on the ways in which UVM student presence in off-campus neighborhoods may be impacting housing city-wide. For simplicity's sake, I have chosen to focus solely on the undergraduate population. Also, the letter argues that the number of on-campus students does not take into account those living in Redstone Lofts, raising the number

of students living in on-campus housing from 5,707 to 6,110 as of 2014 (Gustafson, 2014). Moreover, the letter states that "UVM cannot spend tuition dollars on revitalizing neighborhoods from a perspective of buying, renovating and making properties available to new renters and owners" (p. 9).

The Housing Action Plan (2015) states that "approximately 3,000 undergraduates currently live off-campus in Burlington's residential neighborhoods. Multiple students living in housing originally built for families increases neighborhood parking pressures, creates lifestyle conflicts with long-term residents, and drives up market rents" (p. 7-8). Therefore, the 2015 Housing Action Plan suggested providing 1,500 new on-campus beds to students between the years 2015 and 2020. Due to recent housing initiatives of UVM and Champlain College, 900 new beds still remained to be constructed as of 2015 ("Housing Action Plan," 2015). However, the Downtown Housing Strategy Report (2014) mentions that Champlain College recently acquired land to build housing that could accommodate the needs of 500 of its students. This leaves UVM with the responsibility of housing 400 more students.

2.4.2 Environmentally Responsible Living Communities

Institutions for higher education across the United States are accepting their social and educational responsibilities to steward the environment (Dunkel, 2009). Housing accommodations at these institutions provide the social and infrastructural platforms through which values of sustainability can be diffused, more so than an educational environment alone is capable of (Dunkel, 2009). Certain housing arrangements provide students opportunities to establish a sense of community to varying degrees (Spanierman et al., 2013). Namely, Living Learning

Communities have the potential to promote community coalescence, active participation, and a sense of belonging (Spanierman et al., 2013). Living Learning Communities with a focus on environmental stewardship and sustainability represent an appropriate catalyst for facilitating environmentally friendly behavioral shifts (Dunkel, 2009).

Parrott et al. (2011) published a study in which American university students were asked to design a project that would "promote resource conservation and management, and environmental quality in the housing and building industry" (Parrott, Mitchell, Emmel, & Beamish, 2011, p. 265). Responses to the prompt were later synthesized to hypothesize how students may conceptualize methods to achieve sustainability and how they may set priorities related to the topic (Parrott et al., 2011). Ultimately, students collectively showed trends of believing that housing represents a pathway through which sustainability standards can be met in the future. The main routes by which this can be achieved are inclusive of both alternative energy sources and the use of recycled materials (Parrott et al., 2011).

Berchin et al. (2017) present insights into how institutions for higher learning may offer opportunities to their students and staff members to improve their environmental stewardship outcomes. Although focusing particularly on a Brazilian context, they argue that the most successful way to promote sustainability in universities is to actively increase mindfulness among individuals related to waste disposal, water use, energy consumption, and greener building standards (Berchin, Grando, Marcon, Corseuil, & Guerra, 2017). More related to a United States context, Watson et al. (2015) discuss how integrating responsible technological alternatives into university dormitories also has been shown to provide students the opportunity to help reduce the

institution's energy expenditures as a result of their improved regard for the environment. Furthermore, students living in environmentally focused living environments were statistically more likely to participate in ecologically sound activities such as recycling, as well as activities such as environmental advocacy (Watson et al., 2015).

Despite the overarching potential that is harbored in universities, they paradoxically tend to resist change in their practices and structures, making sustainable development difficult to implement (Ferrer-Balas et al., 2010). Therefore, reflecting on one's behavior as related to sustainability may be the most promising method for making change realized (Ferrer-Balas et al., 2010). This principle is reflected strongly in technologies developed by Oberlin College, where monitoring systems were implemented in buildings for occupants to observe their resource consumption (Petersen, Shunturov, Janda, Platt, & Weinberger, 2007). Given that 50% of energy use in a residence is a result of decision-making on behalf of the resident, incentivizing tools are seen as effective ways to reducing environmental impact on the individual level (Petersen et al., 2007).

Considering the standards by which a Higher Education Institution (HEI) may be classified as sustainable, there are a few particular sectors that must be examined individually that can help determine the precise sustainability level of the institution. These include energy, water consumption, transport, waste, and behavior and management (Freidenfelds et al., 2018). Freidenfelds et al. (2018) argue that HEIs should be oriented towards specific goals in order to be considered adequately sustainable, inclusive of characteristics such as striving for public outreach, sustainable operations and research, and interinstitutional cooperation, to name a few.

3. Objectives

In this project, I attempted to discern the nature of opinions present within target groups regarding the role that University of Vermont housing should take in addressing sustainability endeavors city-wide in Burlington. From the perspectives of multiple target groups, I sought to gain an interwoven understanding of why certain people may be more inclined than others to support the advancement of sustainability in the Burlington community as related to UVM housing, and how these perspectives can be used to inspire the realization of such a project. I expected that economic drivers would be of utmost importance to a range of target groups, whether in the form of students seeking alternative housing options for an affordable price, or for landlords hoping not to lose out due to the movement of students from their off-campus apartments back onto the UVM campus. It was my hope that this deepened understanding of motivating factors could in turn provide readers with insights into the existing sociopolitical frameworks of Burlington that are chiefly involved with sustainability in housing. The accumulated research will hopefully be able to pay tribute to the need for UVM sustainability transitions, taking both adaptive and mitigative strides in achieving emissions reductions at a fast rate in coming years to contribute to global efforts aimed at avoiding climate tipping points and resulting ecological catastrophe.

The objectives of this project are made all the more pressing by debates circulating within the Burlington community regarding the presence of students in downtown neighborhoods, specifically pertaining to their occupation of valuable housing stock and preservation of existing downtown neighborhood infrastructure as described by the Downtown Housing Strategy Report of 2014. Goals of the housing report to bolster the resilience of the city's housing stock, both financially and availability-wise, include increasing the construction of multifamily rentals by

increasing land availability and affordability, promoting policies that encourage local development processes by way of equitably distributing affordable housing supply in the city, and engaging the state, its real estate agencies, and its institutions with the mission of advancing housing programs that could strengthen the economy of the region ("City of Burlington, Vermont Downtown Housing Strategy Report," 2014). Thereafter, the Plan proposes that the city should engage with this issue by assisting institutions in the area to hold their students accountable for inappropriate behavior that may take place off-campus, supporting the potential for on-campus housing expansions to draw more students from the city residential neighborhoods, and improving quality of life efforts in Burlington ("Housing Action Plan," 2015).

4. Methods

After having conducted a literature review on the overarching trends seen in student housing across American universities, it became apparent that a UVM-specific case study would be necessary to identify the precise motives that could instigate a transition to more sustainable housing environments for students. This project addresses housing quality at UVM from the perspectives of multiple stakeholders within the Burlington and university communities as related to environmental sustainability. Framed around the concept of creating an "Eco-Dorm" on UVM-acquired land, participants were asked to reply to a range of survey questions addressing the state of UVM's existing and future housing within the larger demographic context of Burlington.

4.1 Sampling

Stakeholders in UVM's sustainable housing transition included students living both on- and off-campus, faculty/staff at UVM, Burlington City Council members, community members of neighborhoods surrounding the university, and landlords who own properties where students

currently reside. This was an ambitious goal, and I tried to make the process simpler by maintaining some overlap of survey questions between target groups. Through previous conversations and interviews with individuals representative of each stakeholder group, I determined that each group would reveal different mentalities and motivations as related to housing. I therefore gave each group a survey with a selection of different questions so as best to reveal those motivations. Responses provided qualitative insights into the nature of UVM's current student housing accommodations as perceived by the public, especially as related to the institution's future of sustainability implementation.

There were some prominent limitations to the sampling method. First and foremost, each stakeholder group's overall response rate was different for each individual group. For instance, while 50% of City Council returned surveys, the rate of representation among undergraduate student subjects was less than 1% of the overall UVM student body. This makes accurate conclusions difficult to draw when analyzing data, and also indicates that the survey portion of this study should serve more as a guidance to UVM, rather than as overwhelming evidence supporting the need felt among community members to continue along a trajectory of increasingly sustainable housing options for undergraduates. One specific tactic I used for disseminating surveys also incorporated reaching out to acquaintances and asking them to send the survey out to further people. A more effective and reliable method should be used for a continuation of this study in order to ensure higher rates of response.

4.2 Surveys

Questions for the surveys were formulated with the intention of addressing multiple perspectives at once. All questions across different focus groups were posed as ranking along a scale or yes/no questions to reduce confusion and bolster consistency when calibrating responses. A list of specific questions was tailored for each focus group and distributed, and completion of the surveys was optional and anonymous. This was in order to conform to standards imposed on human subject research by the UVM IRB. Each survey varied by question content, but all took into account current student housing accommodations, potential circumstances for student housing that were to be considered and evaluated, rankings of housing preferences, motives in sustainable behavior, evaluations of the importance each individual places on sustainability in their mindsets and behaviors, the economic incentives to join, and the individuals' perception of UVM and Burlington's financial and social relationship. These encapsulating themes must inherently be addressed when conceptually planning for such a large-scale institutional transition, and therefore may offer more of a diverse array of insights to the institution in eventual transformative planning efforts.

Online survey research is described as being both more secure and convenient for conducting research given that it allows for a wider demographic to be surveyed within a specified timeframe, and that it better protects collected data from being lost (Lefever et al., 2007). Of course, speed of response, frequency of response, and cost of survey distribution all had to be taken into consideration before the official study could go underway. After previewing the results of survey data collection efficacy studies, I concluded that online survey distribution would be the most effective for my study. As proposed by de Rada and Álvarez (2017), online responses may

not yield the most responses, but they prove to be more time-efficient in returning answers to researchers.

4.3 Distribution

Students and faculty/staff received surveys through their school email in the form of a REDCap link, along with the proposed "Eco-Dorm" housing plan, as well as a consent form to participate in the study. Email addresses were obtained from class rosters, by searching UVM faculty pages, and by consulting UVM databases. The purpose of distributing surveys over a school email as opposed to social media outlets was to eliminate as much bias as possible, given that all UVM affiliates have access to the same email platform.

It remains important to gather a diversity of opinions within the neighborhood communities surrounding campus as well. Having already spoken with Jack Hanson, Burlington's East District City Council representative, I distributed a survey to the Burlington City Council members, given that they serve as catalysts for legislative transition in the city. Similarly, with landlords, I intended to distribute the surveys to those who own properties of the off-campus students who respond to the surveys to establish a level of consistency in responses. However, since their engagement also was not of the utmost certainty, and given that few landlords manage the majority of student housing in Burlington, this section cannot go as in depth as those represented by students.

Community members were then studied by distributing survey materials over Front Porch Forum and by word of mouth within the community. Speed of response, frequency of response, and cost of survey distribution all had to be taken into consideration before the official study could

go underway. After previewing the results of survey data collection efficacy studies, I concluded that online survey distribution would be the most effective for my study.

4.4 Data Representation

Once surveys were completed, I analyzed the frequency with which each survey question was answered, and by which group. Furthermore, I aspired to show how trends in survey responses shed light on UVM's perceived reputation as a "green" university, and the level of responsibility that the institution is taking in the current climate crisis, both locally and nationally. After gathering survey responses, I synthesized results to observe how the different interest groups view the ideals of sustainable housing at UVM, the institution's responsibility to the environment and to the surrounding community, and each group's hopes for the future of the school, especially as related to its role as an educator for the youth and an incubator for future educated workers and scholars.

Graphic representations serve as tools to better understand the collected data. They assist in displaying to the public the findings of the study that have the potential to turn into real-world implementation for UVM. The goal of gathering this data was that it could be used in practical matters relevant to the transformation of UVM's infrastructure and social climate to be more tuned to the needs of a climate-impacted institution. Furthermore, these responses may help to encourage the administration to take greater strides in improving sustainability practices as related to the social and environmental aspects of its student housing.

5. Study Structure

Taking into consideration the numerous perspectives on housing in Burlington among the city's residents, it became important to create a comprehensive, concrete vision for what Burlington could look like in the future in terms of housing accommodations for students and for those who work in Burlington but may not have the opportunity to live there, either due to economic constraints or lack of actual housing to occupy. To start with, the future student accommodation had to be conceptualized so participants would have a basis from which to answer survey questions to the best of their ability. Before answering these questions, participants were asked to read a prompt upon which they could ground their responses. The new student housing, when conceptualized, needed to stand apart from other existing accommodations on-campus in order to have distinguishable differences in responses from those that individuals may have to other housing already built.

In distributing the surveys, it was my goal to ensure that each target group had a refined list of questions to answer so as to best reveal their own specific group motivations regarding housing transitions at UVM that will have subsequent effects for Burlington. Before completing the survey, which was distributed digitally and whose answers were compiled in an online database, I attempted to conceptualized a realistically attainable yet radically sustainable housing accommodation that would provoke thought in readers and survey participants. Afterwards, participant answers were to be influenced by what they had read, while still revealing individual opinions and motivations. Below is a summary of the number of survey responses received from each target group.

Total Survey Responses

Stakeholder Group	Number of Responses	Proportion of Total Responses
Students	60	42.0%
Faculty/Staff	22	15.4%
City Council	6	4.2%
Community Members	48	33.6%
Landlords	7	4.9%
Total:	143	100%

5.1 Vision for UVM Sustainable Housing

The institutions for higher learning in Burlington are indebted to the local community because of a deficit of on-campus student housing. As of 2014, UVM and Champlain College were expected to still owe the city 900 beds ("Housing Action Plan," 2015). With slowly rising student enrollment rates at UVM, shown by total degree-seeking student numbers of 12,414 in 2010 to 12,805 in 2019 ("FY 2020 Sourcebook," 2020), the population of students could be expected to continue to rise slightly into the coming years. Of course, off-campus housing opportunities are argued to be a major attracting force for students (Gustafson, 2014), and their presence in city housing does not necessarily need to be eliminated. The issue of student encroachment into city housing stock is paired with that of climate change and the need for Burlington and UVM to simultaneously move along a trajectory towards higher standards of sustainability.

To begin the vision for sustainable student housing accommodations, I supposed that UVM was to construct a new student housing facility with a 400-bed capacity in order to reflect an achievable goal for UVM, while also building housing in proportion to its obligations to the city as compared with the new housing needs that need to be met by Champlain College. Burlington's government has proposed that the housing be built in a downtown, off-campus location close in proximity to both the city center and to university campuses ("City of Burlington, Vermont Downtown Housing Strategy Report," 2014). Although this may threaten to provoke conflict between the city and the university due to constant presence of a large volume of students, I concluded UVM should have its new housing constructed on a brownfield site in a downtown location with easy access to either the university or city. This housing settlement would serve as an alternative for older students who would otherwise be able to choose to live off-campus. This housing could be built by a private contractor paid by the university, while alternatively providing students the opportunity to boost their environmental stewardship in their daily lives and by creating community coalescence with the mindset of heightening personal and community regard for sustainability.

The new student housing accommodations will have apartments where students have their own bedroom with shared communal spaces. The housing accommodations will focus on providing students with the opportunity of improving their sustainability performances by means of a variety of innovative methods, including the following attributes that survey participants were asked to read through before answering questions:

- Appliances will be of the highest energy efficiency standards
- Waste will be sorted and disposed of appropriately (recycling, composting, etc.)

- Energy will be derived from renewable sources, either absorbed from the Burlington power grid or produced from on-site renewable energy sources (mainly solar PV)
- Energy usage will be monitored in real time, giving students insight into the nature of their own energy consumption patterns
- On-site dining opportunities will source food from local and organic farming initiatives
- Students will have access to sustainability workshops in which their own voiced opinions will lead to the further development of their living environment
- Construction of the housing will be on a previously developed parcel of land, reducing the need for further land acquisition and green-space removal
- Materials for the building will be sourced sustainably, either from responsible metal/concrete/wood production lines or upcycled from previous purposes
- The construction of the housing will have positive economic and social impacts on the larger Burlington community, allowing housing previously occupied by students to be freed for occupation by longer-term community residents and people employed in Burlington
- Students will find a number of attractive amenities in this new housing accommodation, including access to athletic facilities, dining options, transportation to and from campus, and most importantly affordable rental rates
- Need for private transportation will be reduced given access to amenities and proximity to campus and downtown
- Cost of the housing will be comparable to off-campus housing rates, at around $800 per month per person.

6. Financing Considerations

In order to grasp the full financial scope and obligations of a new student housing project on the UVM campus, a cost prediction must be conducted, thereby predicting the precise costs to the university itself regarding construction, clean energy production, and student engagement, financial support for the university as provided by the state of Vermont, as well as the financial rewards that may be bestowed on the City of Burlington and UVM as a result of an increasingly opened housing market. This analysis will be representative of the proposed building project at UVM only once survey responses are calculated and calibrated to estimate hypothetical student engagement with and enrollment in the proposed living community.

A revolving loan fund is proposed to assist in the financing of this sustainable housing project. As described by Diebolt & Herder-Thomas (2007), "All revolving loan funds operate on a fairly simple premise: An initial sum of money is set aside for the fund. The fund then finances sustainability projects that have a quantifiable monetary savings or return - such projects abound in the realms of renewable energy, energy efficiency, and energy conservation" (p. 5). It is important to estimate the amount of money that will be allocated towards the initial investment of UVM into the sustainable housing infrastructure.

6.1 Key Players

There are many key players who are integral to successfully proceeding with the construction of UVM's sustainable housing project. Incorporating a greater number of key players into the decision-making and implementation processes makes the project more cooperative and cohesive, but can also make the project more difficult to achieve. Described here are some of the

most important players in this particular housing project, their particular roles that they may play in financing the project, and the ways that their support may enhance social engagement with the project:

- University of Vermont: seeks out a private contractor to build the new student housing, reaps the rewards resulting from increased student enrollment in housing that attracts students due to its regard for environmentalism, advanced student amenities, and community-building capacities. The Division of Finance will monitor the economic state of the university as housing is being built, as well as after students have moved in, begun paying for their accommodations, and consuming energy resources. As of 2020, UVM had a total revenue budget of $705.4 million, with Total General Fund Revenues reaching $382 million in the same year, 11% of which comes from state appropriation funds ($42.02 million) ("FY 2020 Detailed Operating Budget," 2020).
- Student Government Association: As suggested by Diebolt & Herder-Thomas (2007), acquiring funds from grants provided through the Student Government Association gives students active roles as stakeholders in the construction, maintenance, and operation of the student housing. This will also provide an initial portion of the funds required for UVM to invest in the sustainable housing project by way of the revolving loan fund. With an approximate annual budget of $1.3 million for funding student clubs and organizations in the 2017-2018 academic year (Schnepf, 2017), SGA could reasonably be requested to allocate $100,000 on a yearly basis to pay off the revolving loan, especially giving the promising nature of building student cohesion within this new community.
- Tuition payers (students and their parents): pay for housing in the new accommodation, in turn resulting in a significant return on investment for UVM. Students will be able to learn

about the new housing's environmental mission, efficacy, and trajectory, and will be able to help direct and learn about the social and environmental meaning of the project.

- Alumni who make donations: Attracted by the radical nature of this new housing initiative, alumni may be motivated to donate in the hopes of hastening the construction of the housing. Given that donations must be directed towards the costs for causes specified by the donor ("FY 2020 Detailed Operating Budget," 2020), this group may be very promising if such a housing project can attract the attention of alumni with environmentally conscious visions for UVM.
- Survey respondents: A collective group of students, faculty/staff, landlords, community residents, and City Council members, the responses of these stakeholder groups to survey questions may inform future decision-making of UVM and city legislators to promote the interests and eventual construction of sustainable student housing
- Vermont Clean Energy Fund: Includes funders who will help to subsidize the construction of housing, supervising the efficacy of on-site clean energy production. The VCEF states that "$2 million for a public-serving institution efficiency and renewable energy program" (State of Vermont, 2018) may be awarded to entities including public and private universities, colleges, and hospitals, making UVM's housing accommodation a highly appropriate candidate.
- Environmental Protection Agency: Provides partial funding for the project through its Brownfield Cleanup Revolving Loan Fund program.

6.2 Support Mechanisms

UVM may go about financing its housing construction project by way of receiving funding through a Brownfield Cleanup Revolving Loan Fund (BCRLF). The United States Environmental Protection Agency (USEPA) states that while lending is available, commercial lenders usually only grant loans to projects where cleanup costs need to be covered in combination with the construction, providing funding for construction on brownfields (USEPA, 2000). UVM must also strike a deal with potential investors in the housing project that will ultimately produce a balanced economic outcome for both parties involved, which ensures that funding is secured in a prudent manner that will not indebt the university to investors. In the words of the EPA, "commercial lenders base lending decisions on the relative profitability of loan transactions," (p. 13), which will mean that UVM must prove its trustworthiness and vested interest in providing sustainable housing to its students given resulting financial rewards for the future.

The EPA's official definition of a brownfield is "a property, the expansion, redevelopment, or reuse of which could be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant" ("Smart growth, brownfields, and infill development," 2019, n.p.). The Vermont Agency of Natural Resources has published a list of brownfields in Vermont downtown, showing a number in Burlington located on Pine Street in close proximity to one another (Vermont Agency of Natural Resources, n.d.). Therefore, the proposition to redevelop a contaminated site on Pine Street may allow UVM to qualify for a BCRLF. In making sure that UVM adheres to environmental regulatory ordinances as imposed by federal, state, and local governments, potential investors will perform a cleanup cost and site assessment prior to providing funding (USEPA, 2000). Despite my proposal, there has already existed a significant amount of

resistance to a city development plan in the South End through which Pine Street runs due to fears of gentrification (Walsh, 2015). Similar arguments may be made against this housing environment, and it is therefore important to consider the possibility of utilizing other brownfields in Burlington that are more socially suitable for student housing.

The USEPA restricts its funding to limited categories of applicants. Being that UVM qualifies as a non-profit organization, it may be eligible to receive funding from the USEPA ("FY20 guidelines for brownfield revolving loan fund grants," 2019). Costs of the project would include the construction of the facility, sourcing of materials to build, provisioning of amenities, energy efficiency certifications, installations of on-site renewable energy infrastructure, and labor costs. The EPA specifies that typical funding available for RLF grants related to brownfield redevelopment is often around $8 million for a period of up to five years, with the potential for further funding to become available, typically also with low- or no-interest rates applied to the loan itself ("FY20 guidelines for brownfield revolving loan fund grants," 2019).

Being a large state-funded institution in Vermont, the university may also be able to receive funding from the state government to complete the project. The Vermont Clean Energy Fund (VCEF) has delineated the standards to which it holds prospective renewable energy project funding recipients. As it offers $2 million to public-serving institutions inclusive of universities, the VCEF could help subsidize the construction of the Eco-Dorm (State of Vermont, 2018), adding to extra costs covered by the potential awarding of a BCRLF provided by the EPA.

6.3 Sustainability and Financial Impacts

The theoretical impacts of the housing project must be assessed in a range of time scales. This is in order to show to the City of Burlington and to UVM the necessity of constructing sustainable student housing and the resulting benefits that may become experienced by community members of all backgrounds if it is indeed to come to fruition. In the event that survey data revealed support among participants, I included some of the possible described effects below:

- Short term: students become absorbed into this new housing from their prior off-campus accommodations, vacating apartments in the downtown areas that will in turn depressurize the housing market in Burlington and allow for an initial return on investment for stakeholders financially involved in the construction.
- Medium term: off-campus housing has been vacated, resulting in a lowered rental rate for residents of the community, and UVM's overall climate action performance becomes significantly improved
- Long term: Students have established peer collectivity in their new housing environment, Burlington's vacated housing stock becomes sustainably repurposed for single-/multi-family use through funding mechanisms such as those provided through Efficiency Vermont that upgrade a home's energy efficiency standards (Efficiency Vermont, n.d.), UVM's environmental performance is improved, UVM upholds its responsibility to steward the communities surrounding campus, and an overall model for sustainable housing can be used to inspire transitional housing standards for universities and institutions elsewhere.

6.4 Cost Estimates

Judging by overall costs expended by UVM for past infrastructure projects, feasibility of payment mechanisms for the construction of this new Eco-Dorm may best estimated. It is important not to disregard the significance of gifts for UVM provided by alumni and other donors, as is seen in the instances of the construction of UVM's new $95 million athletic facility (Quigley, 2018) and the $500 million Move Mountains Campaign (University of Vermont, 2015). As stated previously, gifts from alumni must be used for the purpose designated by the gift-giver themselves ("FY 2020 Detailed Operating Budget," 2020), so the surveys may serve as a viable method by which to assess willingness to pay for sustainable housing construction among UVM and Burlington community members.

Being guided by the price of construction of UVM's most recent residential addition to campus, Central Campus Residence Hall, with a total cost of construction reaching $65 million (Kennedy, 2016), it may be reasonable to assume that the cost of a carbon neutral housing environment for students may fall in a similar price range. However, the precise pricing of such a housing project remains outside the scope of this research project. Furthermore, provided UVM receives funding from the EPA in the form of a revolving loan fund, as well as funding from the VCEF, the institution would be able to offset the initial expenditure by upwards of $10 million. Furthermore, assuming that 400 students would be paying $800/month to live in the housing for a total of about 8 months of the typical academic year, a total of $2.56 million would be collected annually to help pay off the costs of implementation. Additionally, UVM would have to pay in order to acquire the brownfield property, or at least in order to guarantee that its students would

have priority access to this new living environment if previously occupied units in residential neighborhoods are to be emptied.

7. Discussion/Expected Outcomes

Logically, there must be some benefit to the individual target groups present as regarding sustainable housing transformations in order for them to support its implementation at UVM. Surveys had to provide specified insights into these benefits, which ultimately would serve as a template for persuading UVM's administration to act on the findings of this research. Furthermore, the accumulation of survey data was designed to further inform target group opinions on housing, in turn bolstering their motivation to establish alternative housing options for UVM students.

I expected to uncover that students and faculty/staff would have the most immediate concerns with the transformation of UVM housing accommodations becoming more environmentally conscious, due to their close relationship and direct involvement with the institution. I also expected that community residents and City Councilors would have motivations that encourage the need to transition the university towards a more socially and environmentally responsible standpoint in terms of housing, as effects of transferring students away from inefficient townhouses will have matriculating effects for the entire city demographic composition. Meanwhile, I did not expect landlords to be supportive of a transition that would entail the migration of students from their off-campus apartments to a newly constructed communal living space operated by UVM, as this process would have disruptive effects on the market value of apartments downtown.

This project may also inform research into why people may have varying directive interests in divesting from fossil fuels and transitioning existing infrastructure to a state in which social and environmental benefits will be encapsulated in one collective sustainable solution. This would be a significant counterpart of the research findings to consider, as varying perspectives of the best methods of response to climate change and its consequent social effects are in existence everywhere, even in commonly perceived green locales on a variety of scales, inclusive of UVM, Burlington, and even the entire state of Vermont.

8. Results and Implications

8.1 Students

Students offer important insights in this study into the feasibility of consensual participation in an alternative housing environment. The UVM administration and those in charge of marketing the housing environment should be conscientious of student desires and sentiments concerning existing housing, as well as ideals of housing environments as they are conceptualized by students. This study should be particularly enlightening in the context of student-university relations and perceived efficacy of existing housing in creating community cohesion in student groups and defending the interests of individuals who choose to live environmentally conscious lifestyles while attending UVM.

Student participants were broken down into cohorts distinguished by off-campus or on-campus residency status. Of the respondents, 14 lived on-campus, and 46 lived off-campus. Of course, age and student standing play big roles in determining whether individual students live on- or off-campus. Thereafter, off-campus students were asked to identify the factors that drove them

most to make the transition from on-campus to off-campus housing. Students were not restricted in the number of answers they selected during their survey completion process.

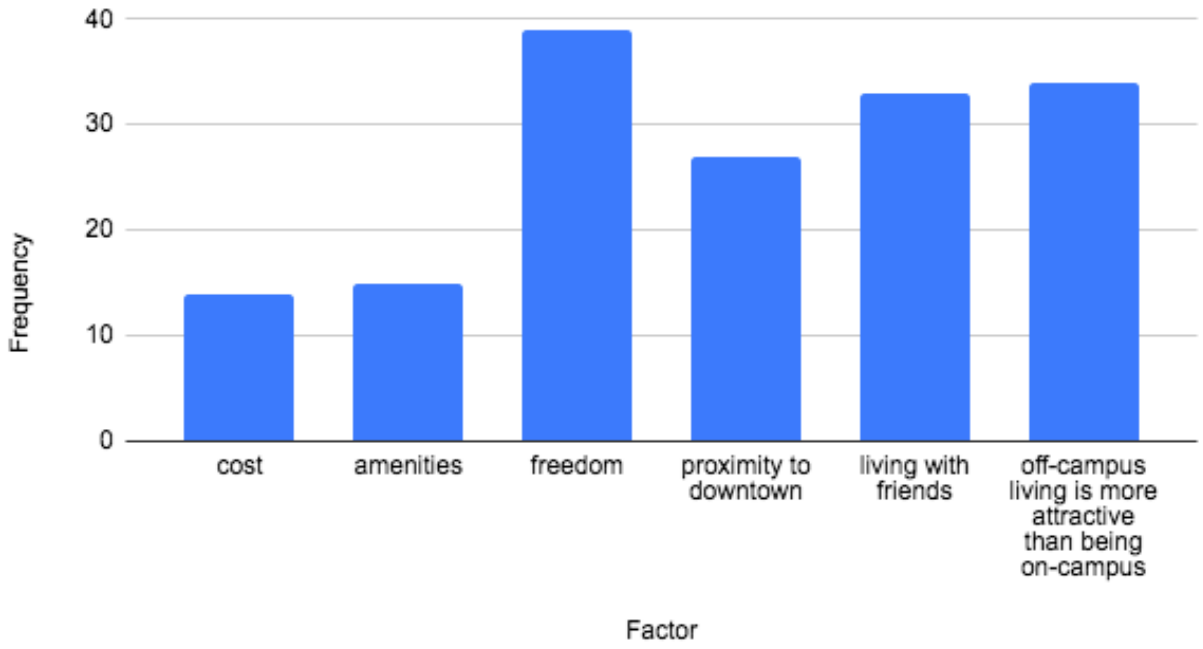

Figure 1A: Factors motivating a move off-campus. This sheds light on the most important factors in students' decisions to seek alternative housing accommodations from those on-campus

Freedom stood out as the most significant deciding factor for off-campus students to choose their current housing accommodations, followed by the fact that off-campus living is perceived as being more attractive than being on-campus, and living with friends, respectively *(Figure 1A)*. It therefore becomes apparent that paradigm shifts in the mode of conventional off-campus housing accommodations are necessary in order to attain high enough levels of student enrollment in the new housing environment to make it financially feasible for UVM to construct in the first place.

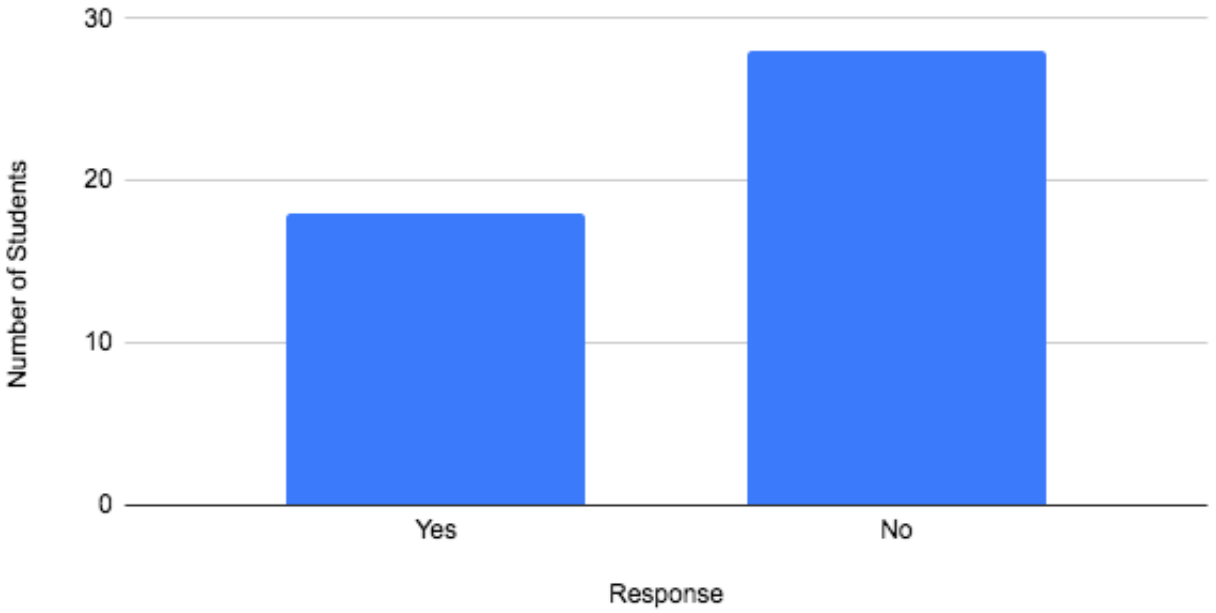

Figure 1B: Would off-campus students trade their current housing for an Eco Dorm? By and large, most respondents have indicated no.

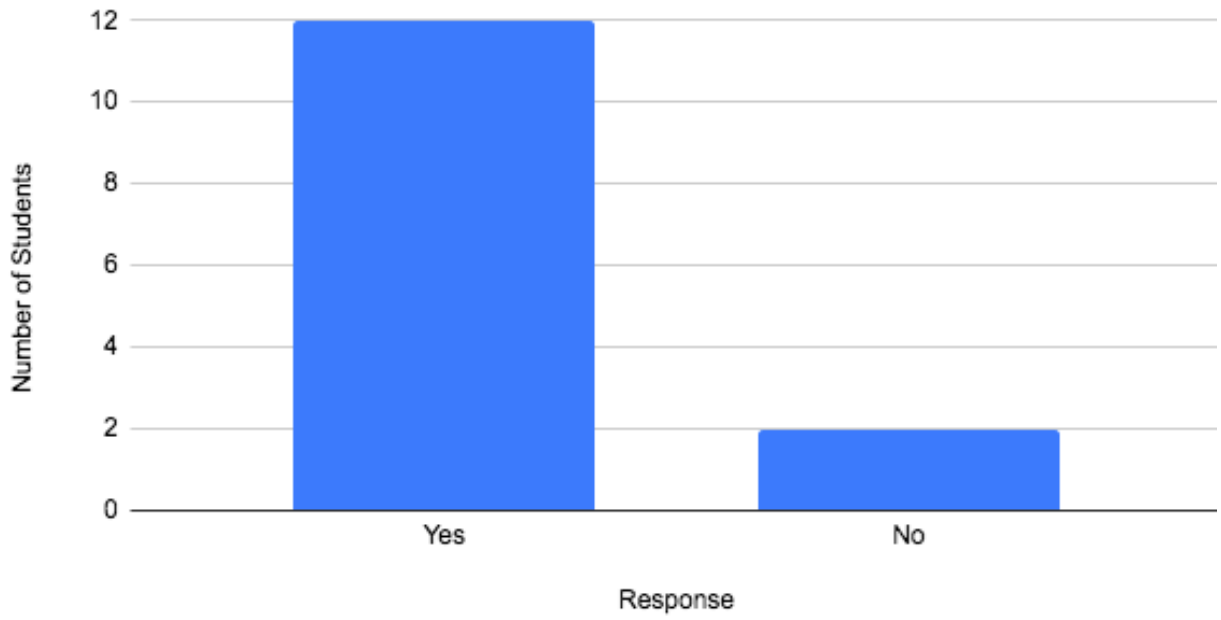

Figure 1C: Would on-campus students trade their current housing for an Eco Dorm? To this question, most respondents answered yes.

This also represents especially valuable findings when confronted with the data showing that a majority of off-campus students indicated they would not trade their current living accommodations for a carbon-neutral living arrangement on campus *(Figure 1B).* Not only could this create a roadblock for success in the new housing, but it also may contradict the findings of Ong et al. (2013) that shows that CUNY students would prefer to live on-campus due to prospects of living convenient lifestyles. Conversely, a heavy majority of on-campus students said they would trade their current accommodations for a carbon-neutral one *(Figure 1C).* This holds promise for underclassmen students, inclusive of freshmen and sophomores, who are required to live on campus and who would be more inclined than their off-campus counterparts to choose to live in this new housing.

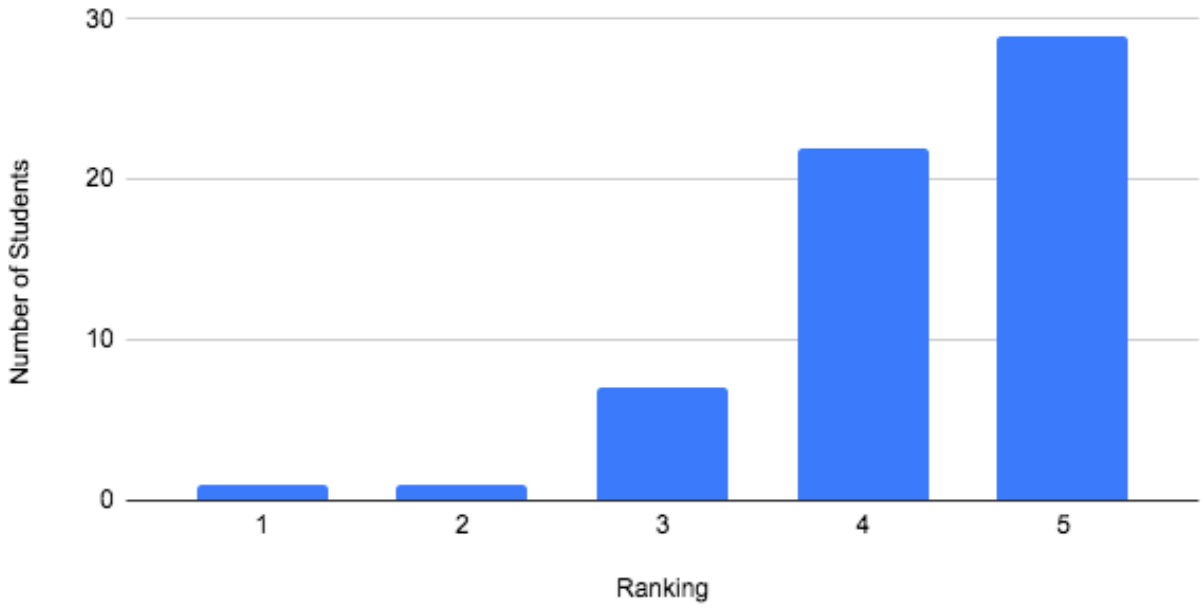

Figure 1D: Importance to students of UVM investing in sustainable housing for students & faculty/staff. This helps allude to some of the motivation experienced by student samples to see sustainable housing be built in Burlington.

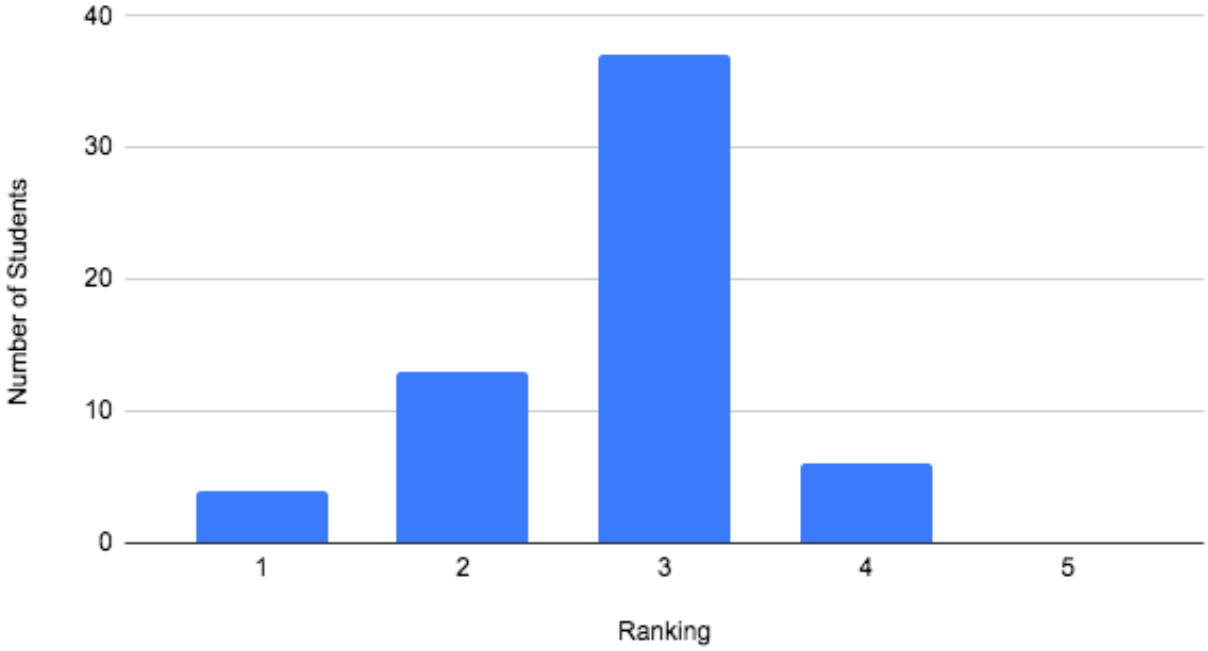

Figure 1E: Student ranking of UVM sustainable housing endeavors. Ranking most frequently at a 3, participating undergraduates believe UVM could do more to promote sustainability.

While there were clear differentiations between the ways in which on- and off-campus students responded to certain survey questions, there was consistency in the responses regarding UVM's overarching sustainability performance and reputation. By and large, students believed with the highest frequency that it was of utmost importance for UVM to invest in sustainable housing solutions for students and faculty/staff *(Figure 1D),* with almost half ranking at 5 on a 5-point scale. Along the same scale, students also believed with the highest frequency (61.7%) that UVM only warrants a 3 out of 5 in terms of how well it is currently performing in the realm of sustainable housing endeavors *(Figure 1E).*

It would have ultimately been helpful to keep on-campus and off-campus students separate throughout the survey process in order to better calibrate what each subgroup had to say in response to the questions posed. However, gaining a big picture understanding of UVM student sentiment may help to better align efforts with the existing desires among the collective student body. For instance, questions regarding level of satisfaction with UVM on-campus housing, awareness of legal housing agreements between UVM and Burlington, and general support for the construction of the Eco-Dorm combined students from both on-campus and off-campus.

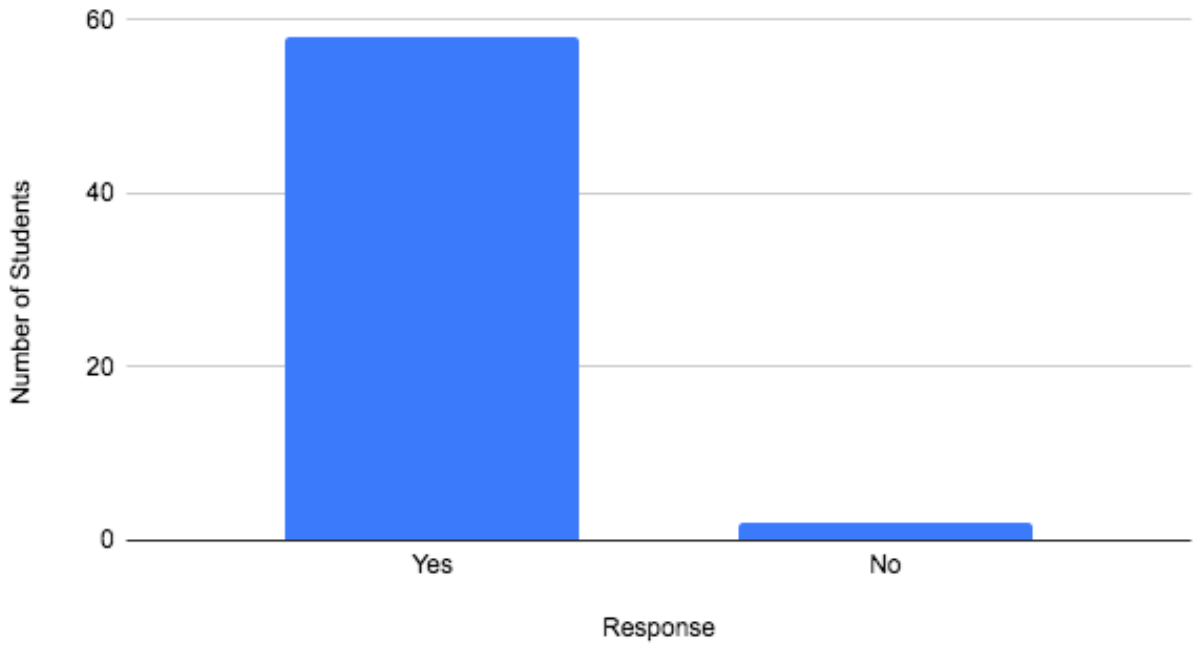

Figure 1F: Student support of Eco-Dorm construction. This figure pays tribute to some of the undergraduate student sentiment regarding the need for the institution to improve its environmental performance.

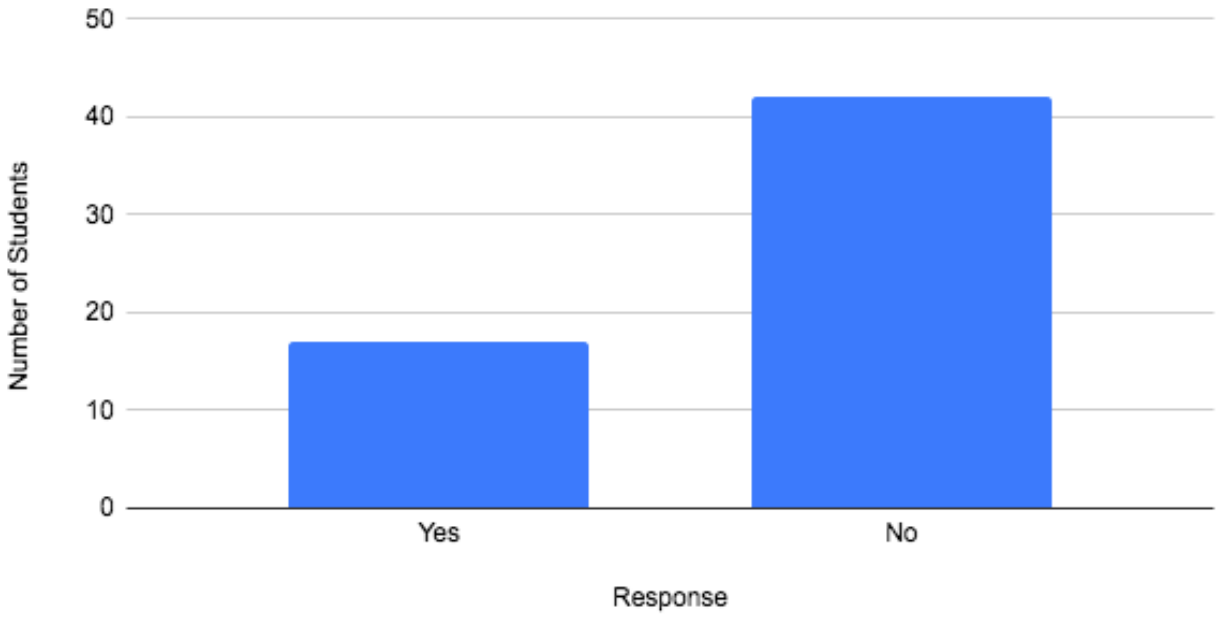

Figure 1G: Student perspective on whether UVM is preventing its housing from encroaching on residential neighborhoods. This shows some of UVM students' concern for the wellbeing and resilience of surrounding communities.

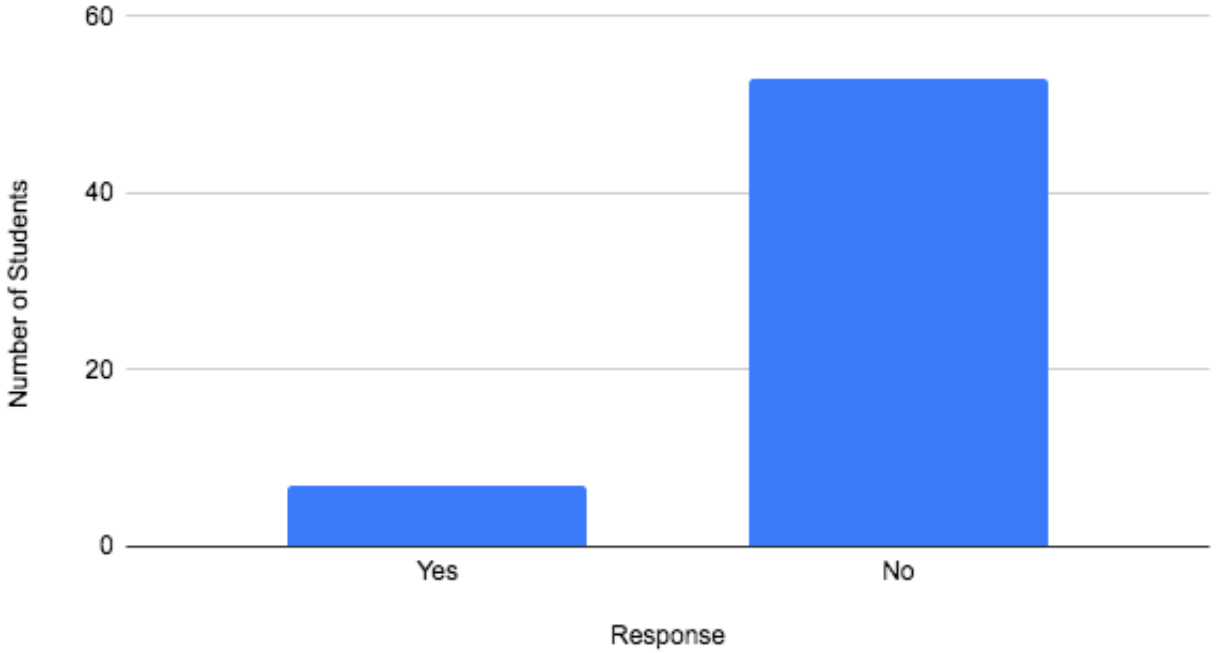

Figure 1H: Student awareness of legal housing agreements. Low awareness that this graph indicates suggests students may not be fully informed on housing politics in the city.

Going into further specifics, general support for the construction of the Eco-Dorm was at 96.7% among students *(Figure 1F).* This information is important to keep in mind when data reveals that 71.2% of students surveyed believed that UVM is not pulling its weight in providing housing for students without encroaching on residential neighborhoods in Burlington *(Figure 1G).* This is alongside datum that shows how 88.3% of students answered they are unaware of the current housing agreements between Burlington and UVM that currently has the university indebted to the city in terms of housing occupancy rates among students in off-campus neighborhoods *(Figure 1H).*

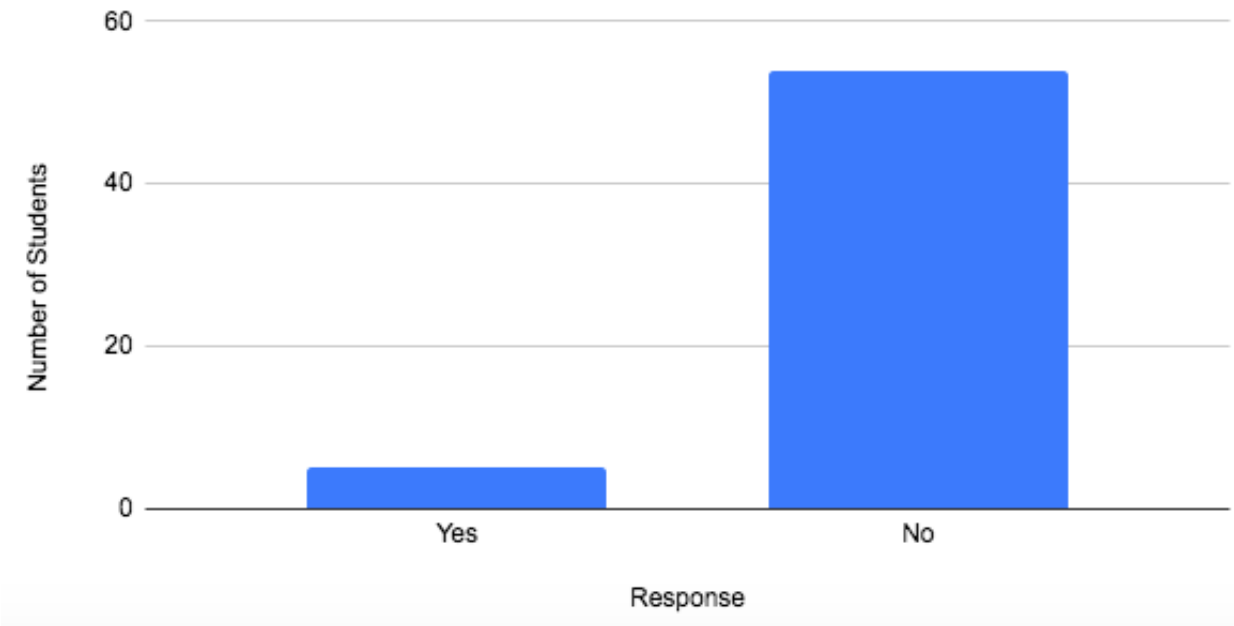

Figure 1I: Do students think there is enough transparency regarding UVM sustainable housing options? This figure shows that transparency is conceived as being quite low among participants.

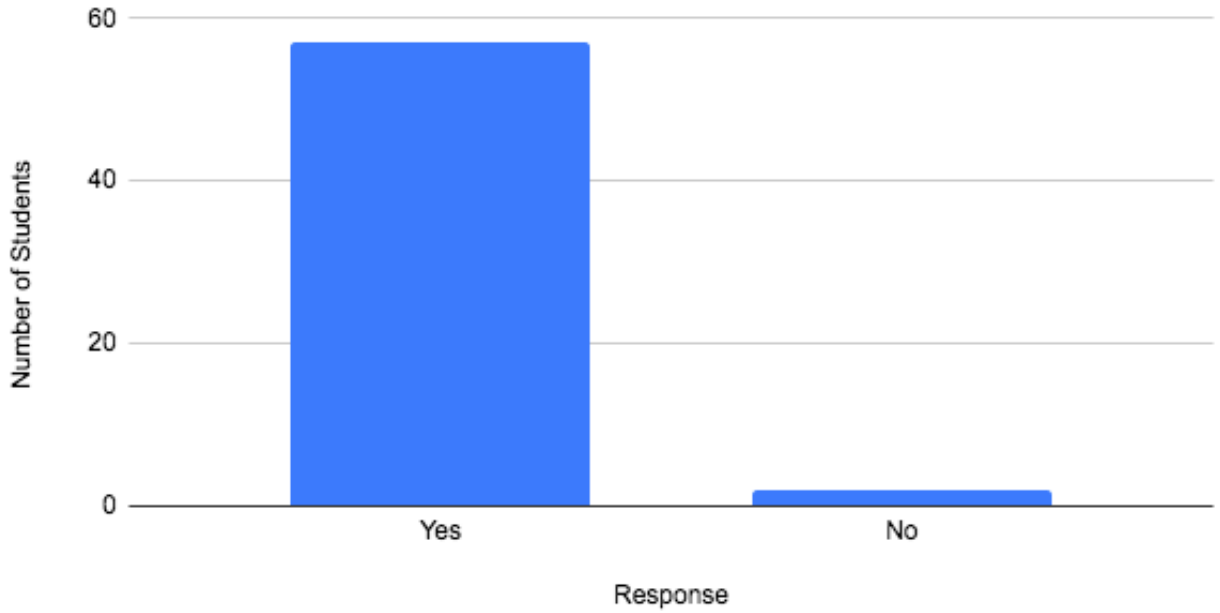

Figure 1J: Would students like to see UVM diversify its housing options? Almost all respondents to this question answered in support of increased diversification.

Further expanding on the narrative of student dissatisfaction with housing provided by UVM is my finding that 91.5% of students on- and off-campus said that they did not think there is enough transparency regarding sustainability in different housing options provided to them *(Figure 1I)*. A further 96.6% claimed they would like to see UVM diversify its housing options as *(Figure 1J)*. These two figures show that UVM may hold a lot of potential in appealing to its student body with the construction of an Eco-Dorm, even if off-campus students largely claim that they would not choose to live there instead of in their current housing arrangements.

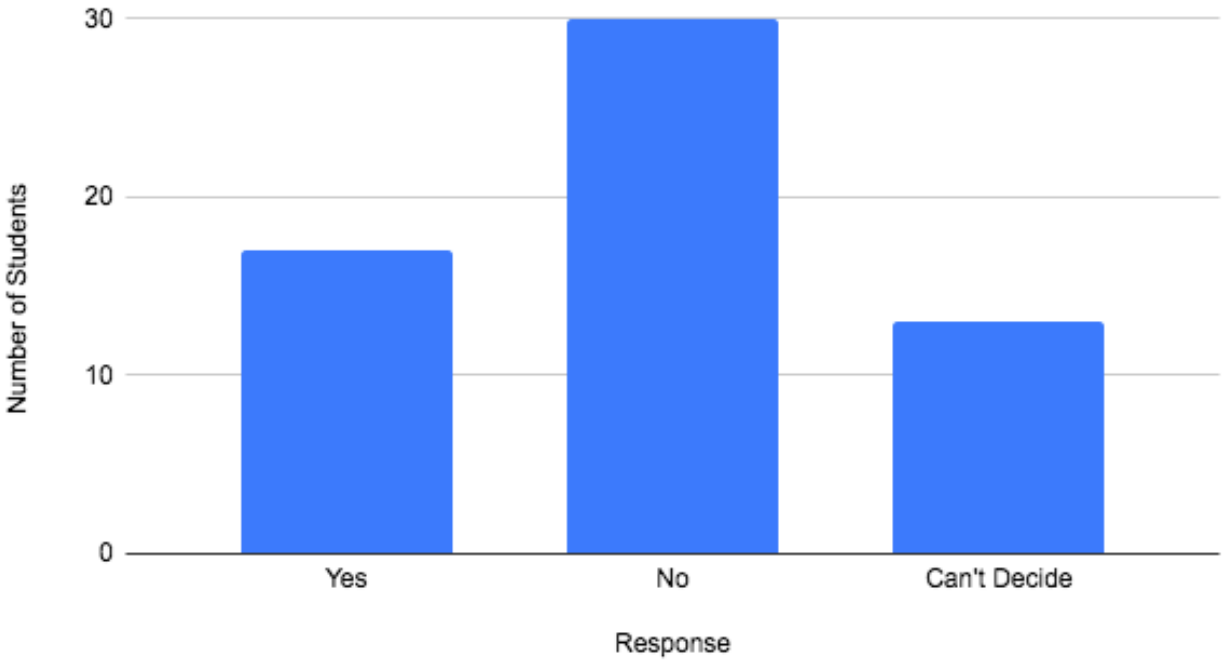

Figure 1K: Is UVM on-campus housing satisfactory? A large portion of student respondents indicated "no" or "can't decide," indicating room for improvement of living environments

Ultimately, it seems as though students are dissatisfied by their housing in many ways, regardless of whether it is owned by UVM or not. The greatest proportion of student respondents (50%) were found to believe that UVM on-campus housing is not satisfactory to its students *(Figure 1K)*.

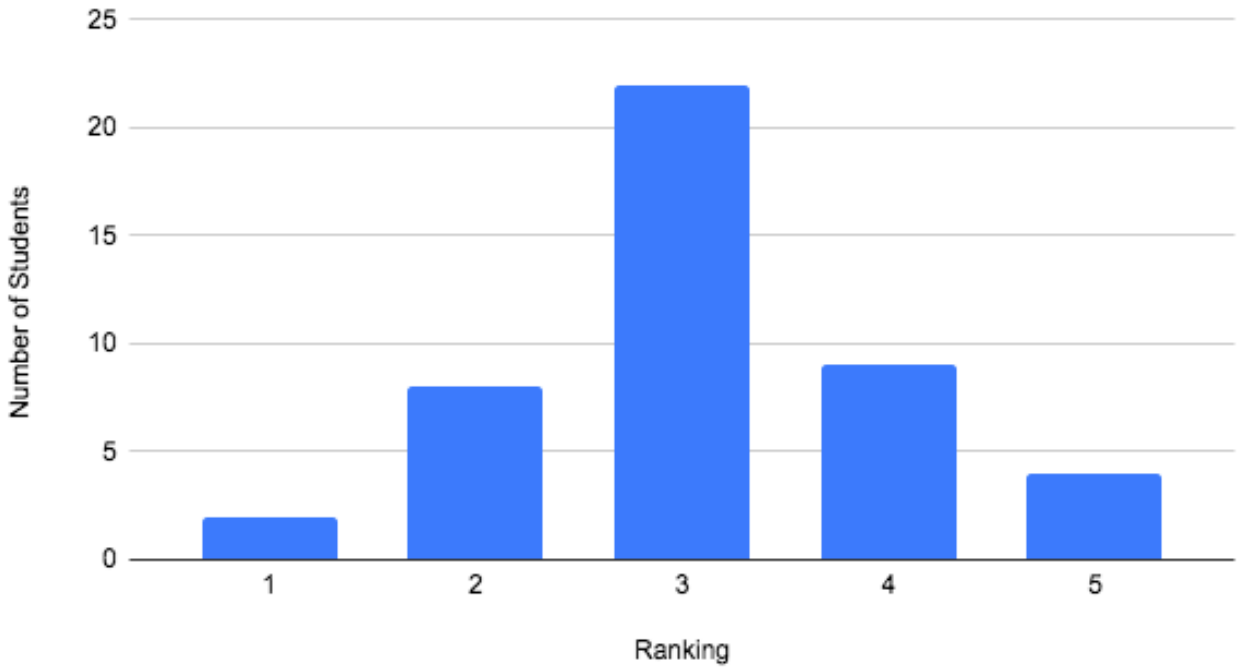

Figure 1L: Off-campus student sense of community. On average, participants ranked a medium level of experienced community cohesion.

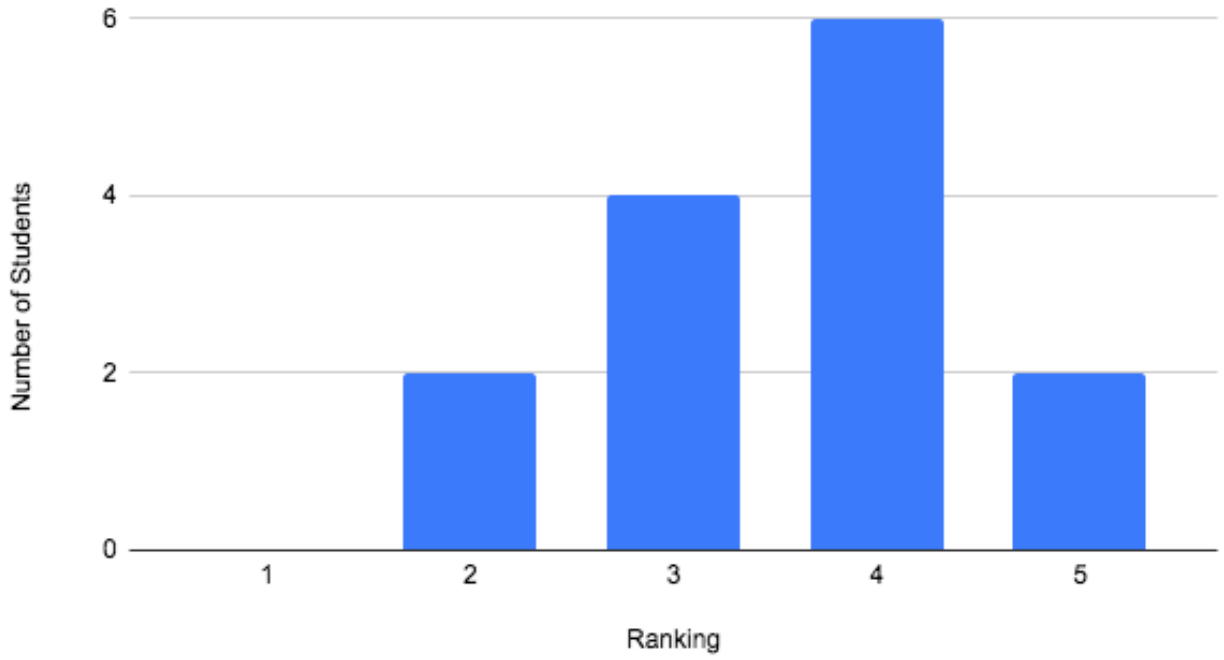

Figure 1M: On-campus sense of community. Participating on-campus students on average ranked higher sense of community than their off-campus counterparts.

Finally, it remained critical to assess the sense of community that both on- and off-campus students experience in their current housing environments. Communities as a social environment offer interesting insights into the success of environmental initiatives, as shown by the research of Daneri et al. (2015), in which students were shown to be able to help in promoting transformational measures aimed at sustainability initiatives within their communities by way of project-based learning and research projects. Within the UVM off-campus community, students were asked to rate their sense of community, resulting in an average ranking of 3 *(Figure 1L),* which demonstrates clear room for progress. Meanwhile, on-campus students were asked to perform the same rating, with the average ranking being a 4 *(Figure 1M).* Overall, on-campus students displayed trends that skewed towards stronger senses of community cohesion within their living environments.

8.2 Faculty/Staff

My methodology for distributing the surveys to faculty/staff was originally to distribute it using a mass email to all UVM community members, but following difficulties in contacting UVM administrators and tech support teams, I chose to instead send out the survey to faculty within my major and minor departments of Environmental Studies and Community Development and Applied Economics, as well as my previous professors in a range of departments whose courses I had enrolled in throughout my Arts and Sciences education. This was in the hopes of gathering an interdisciplinary and diverse array of responses. However, this also entailed that staff did not end up responding to my survey, therefore limiting the ranges of perspectives able to be gathered from UVM employees.

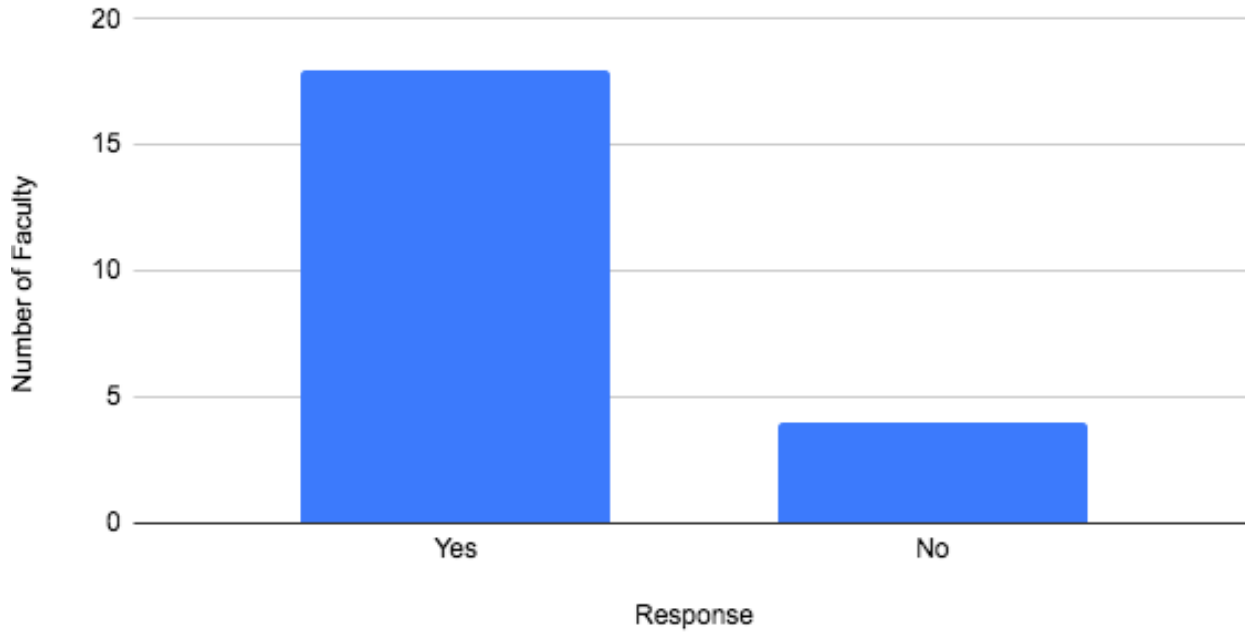

Figure 2A: Would faculty at UVM live in Burlington if provided housing at an affordable price? Most participating faculty have responded yes.

Of course, UVM professors do not all live in Burlington. While it would have been helpful to initially ask professors if they lived in the city, I tried simplifying the questions by only asking whether or not professors would choose to live in Burlington if presented with the opportunity at an affordable price, to which 18 responded yes and 4 responded no *(Figure 2A).* This question holds significant implications for the feasibility of moving faculty/staff into housing in Burlington that was previously inhabited by students who made the transition from residential neighborhoods back onto campus and into the sustainable living accommodation. The high level of interest in living in Burlington among faculty respondents (81%) leads me to believe that this proposition would be achievable.

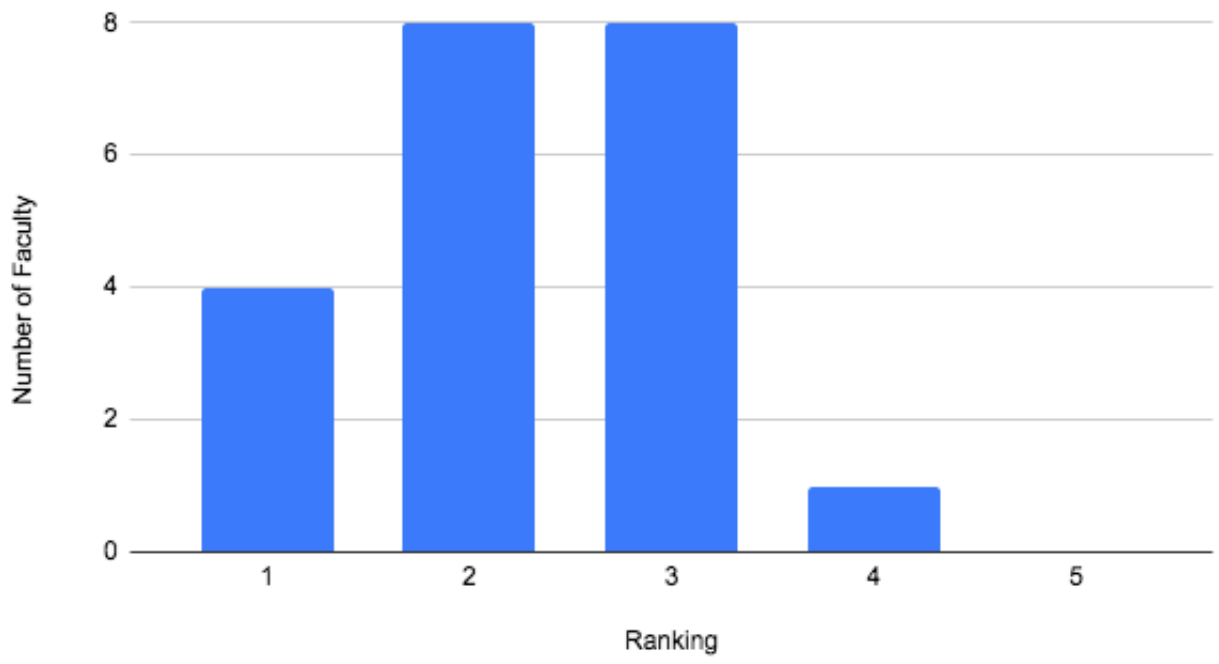

Figure 2B: Faculty ranking of UVM sustainable housing options. Lower-end rankings indicate perceived room for progress by participating faculty.

Of further interest is a general understanding of how UVM professors think the institution is doing in regard to sustainable housing options for students. On a scale of 1-5, 1 being the worst and 5 being the best, no professors believed UVM warranted a 5 in terms of its sustainable housing endeavors, with the most frequent ranking be a 2 and 3 *(Figure 2B).* Although faculty and staff may be significant stakeholders in the institutional sphere of UVM, they may not have as much sway in deciding the trajectory of the institution's operations. Therefore, these results may not end up holding UVM administrators and governing bodies to higher standards of accountability, even though professors themselves are shown to generally deem current student housing environmentally inadequate.

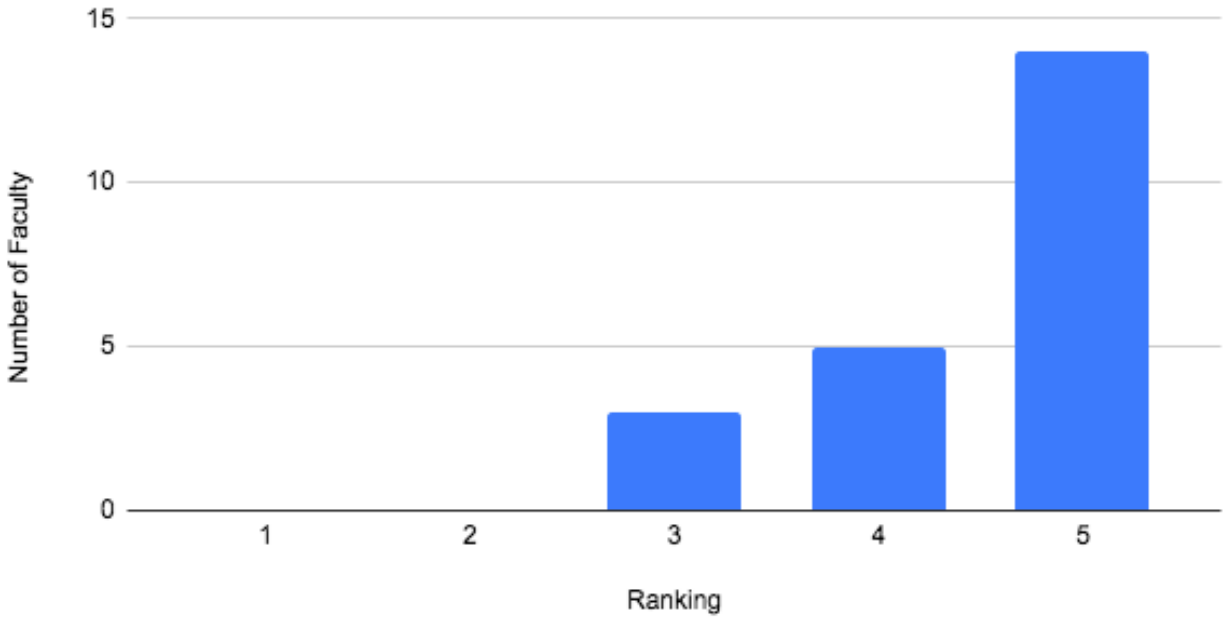

Figure 2C: Faculty ranking of importance of providing sustainable housing options for students and faculty/staff at UVM. Generally, faculty have ranked sustainable housing of high importance.

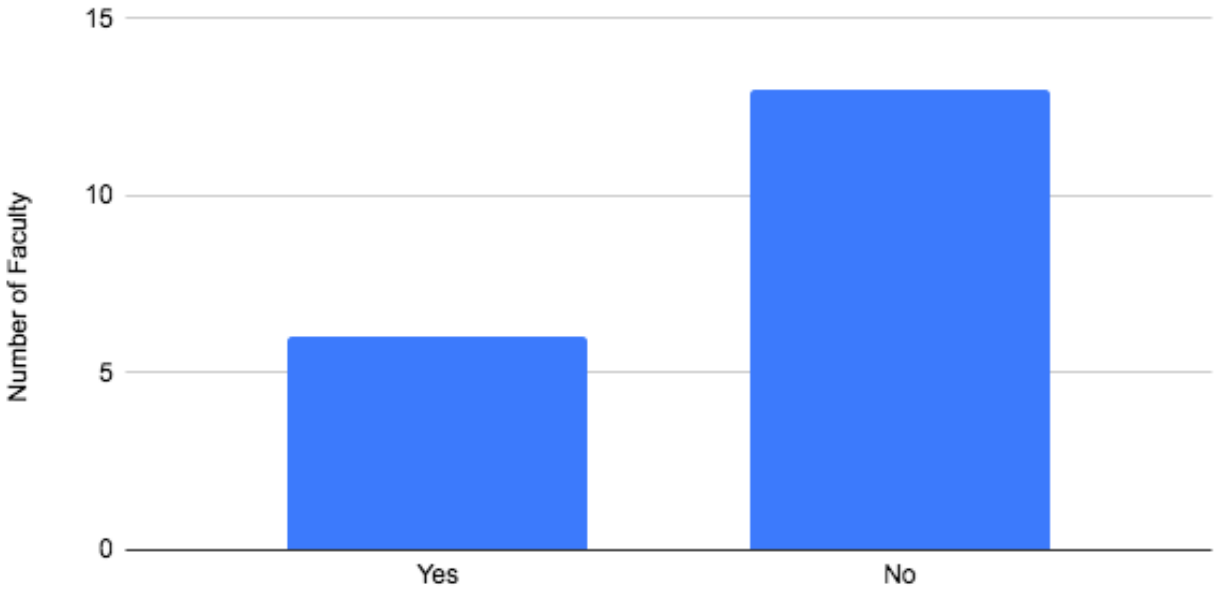

Figure 2D: Do faculty think UVM housing is satisfactory to its students? Generally, faculty do not believe so.

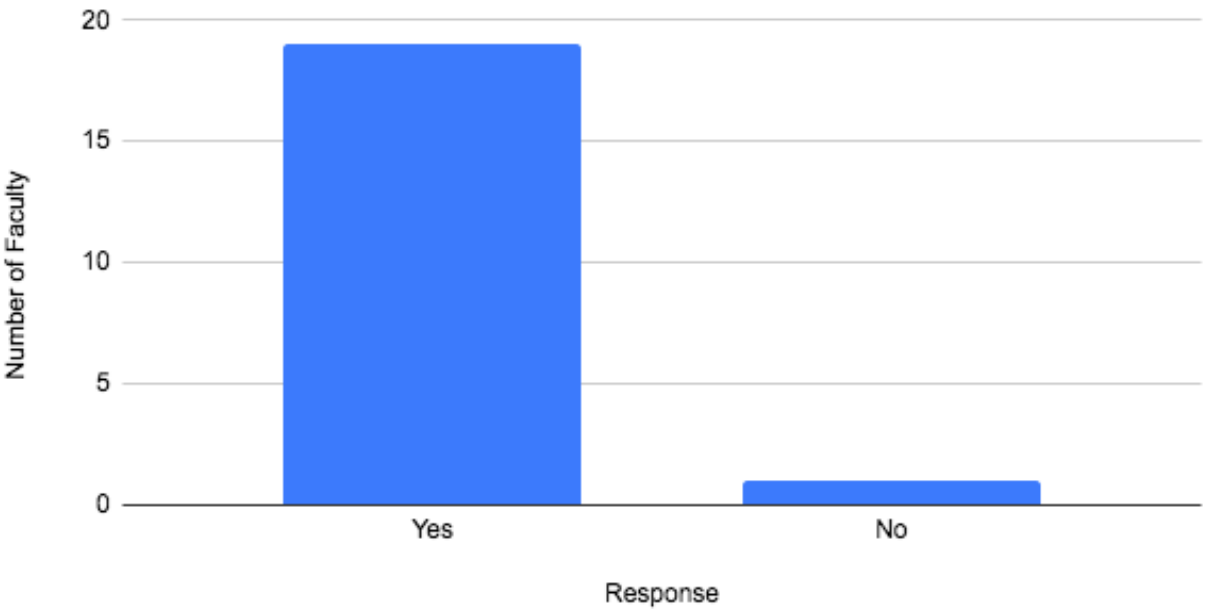

Figure 2E: Do faculty think UVM can improve its sustainability performance by addressing student housing? Respondents generally believed so.

Further responses by faculty continued to express sentiments of UVM not performing well in terms of sustainable housing, creating a narrative of disregard for environmental interests at the university interwoven with disdain for the current state of housing, necessitating an institutional sustainability transition that will have widespread benefits for the Burlington community. When prompted to consider how important it is that UVM invests in sustainable housing options for students and faculty/staff, two thirds of respondents answered 5, with nobody rating 1 or 2 as *(Figure 2C).* Of further significance were the two thirds of faculty participants who believed that UVM on-campus housing is not satisfactory for its students *(Figure 2D).* Meanwhile, 94.7% believed UVM could effectively improve its sustainability performance by addressing student housing *(Figure 2E).* This finding gives weight to the argument that a sustainable transition to UVM housing may instigate an overall higher level of satisfaction among students and therefore would perhaps incentivize students to decide to live in such an accommodation voluntarily.

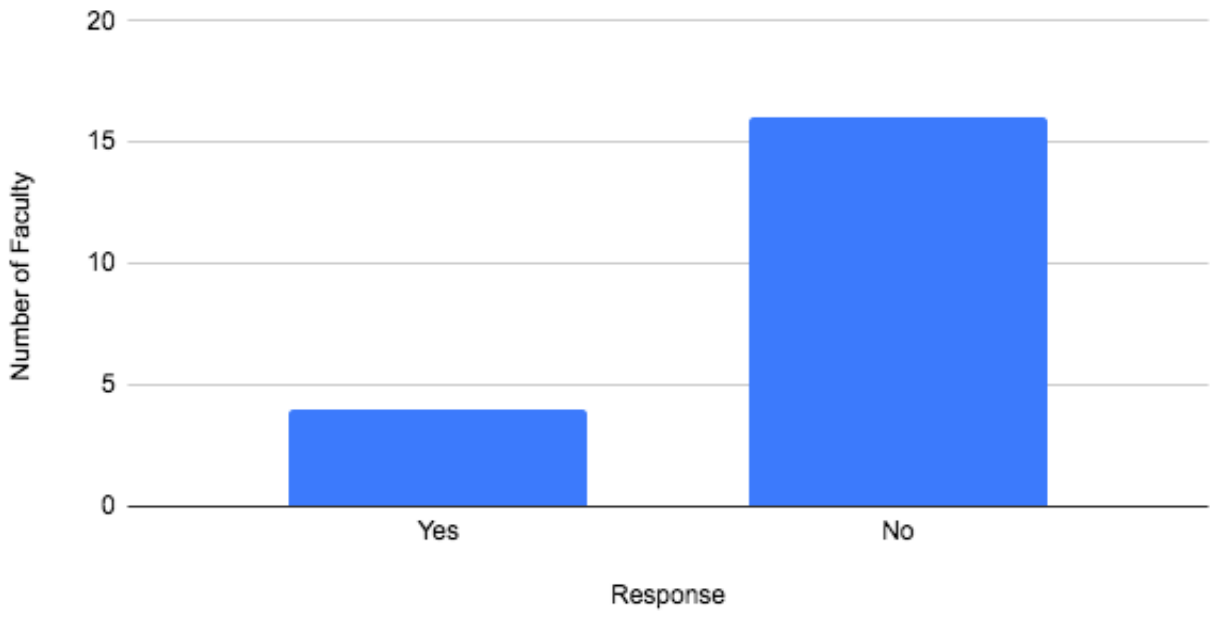

Figure 2F: Do faculty think UVM provides housing to its students without encroaching on nearby neighborhoods? Most faculty believe not.

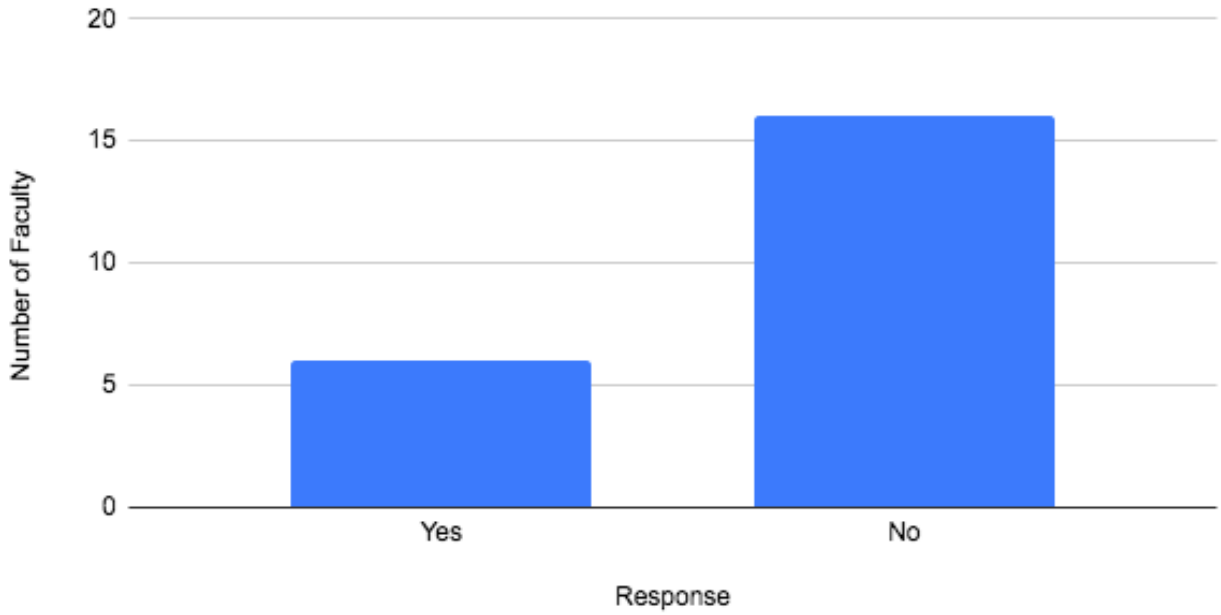

Figure 2G: Faculty awareness of legal housing agreements between UVM and Burlington. This graphic shows that few faculty respondents know of any agreements.

Few faculty members believe that UVM is pulling its weight in providing housing for students without encroaching on residential neighborhoods in Burlington with almost 80% claiming they did not believe it was *(Figure 2F).* More than three quarters of the surveyed faculty were also shown to be unaware of legal housing agreements delineating housing capacities and restrictions between UVM and the City of Burlington *(Figure 2G).* This finding points to UVM's lack of accountability in absorbing more of its students from off-campus neighborhoods as defined by existing legal agreements, and as reflected in the opinions of its community members, proliferating the conditions that have allowed for the continued development of a housing crisis in Burlington rooted in trends of student residential encroachment into off-campus neighborhoods and inflated rental rates.

8.3 City Councilors

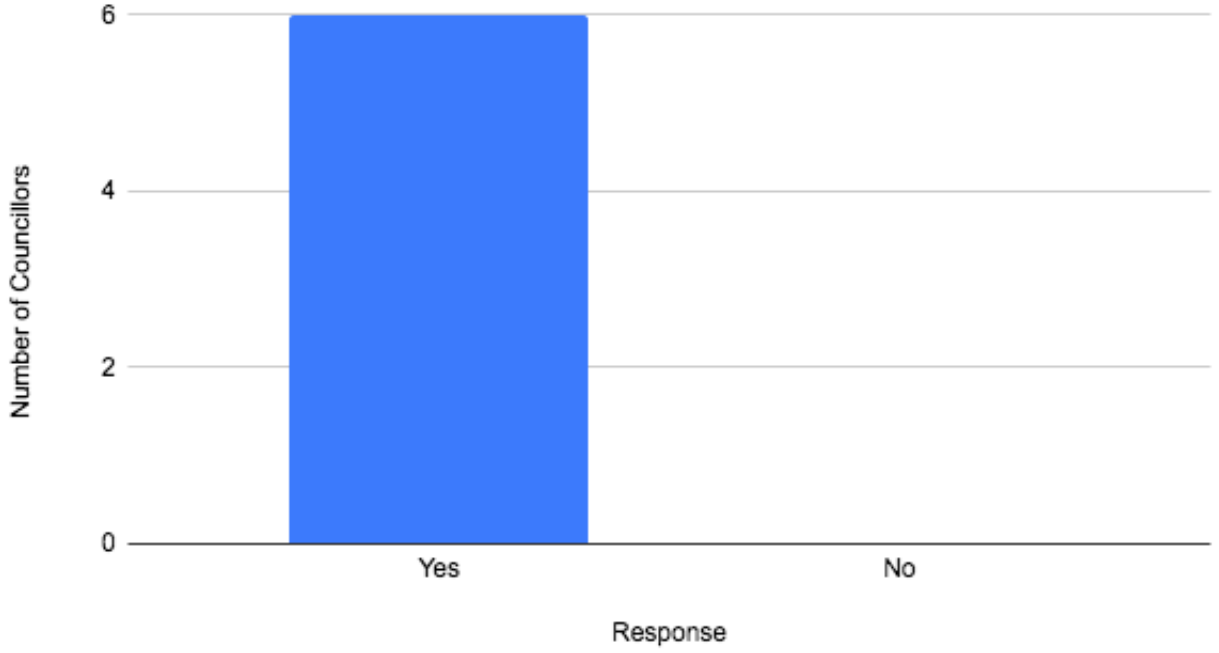

Figure 3A: City Councilors who support Eco Dorm construction. Respondents unanimously were in favor of construction.

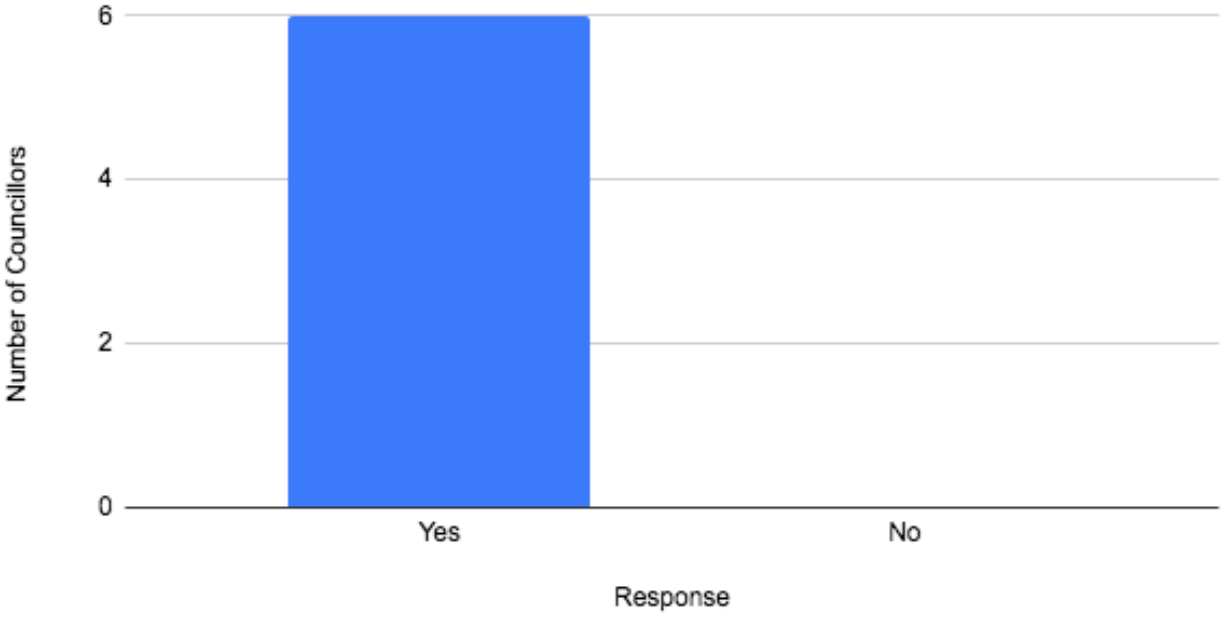

Figure 3B: City Councilors who would live in Burlington if provided with affordable prices. Respondents responded that they would with unanimity.

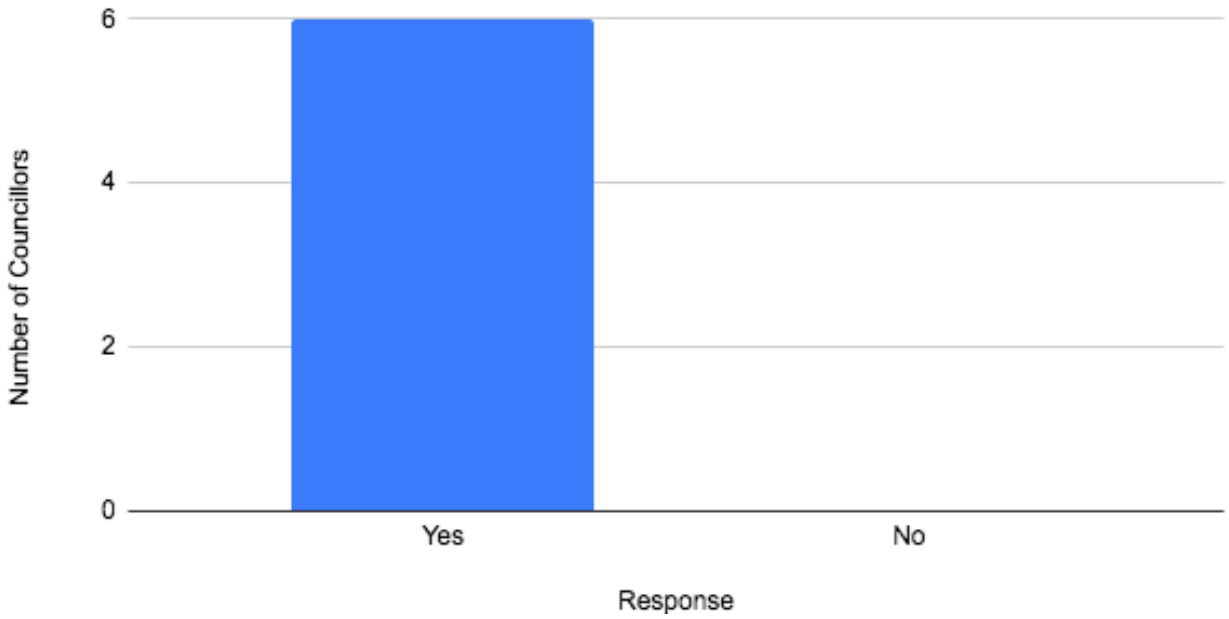

Figure 3C: City Councilors who think UVM can improve its sustainability performance by addressing student housing. Once again, all respondents said they all believe UVM could do so.

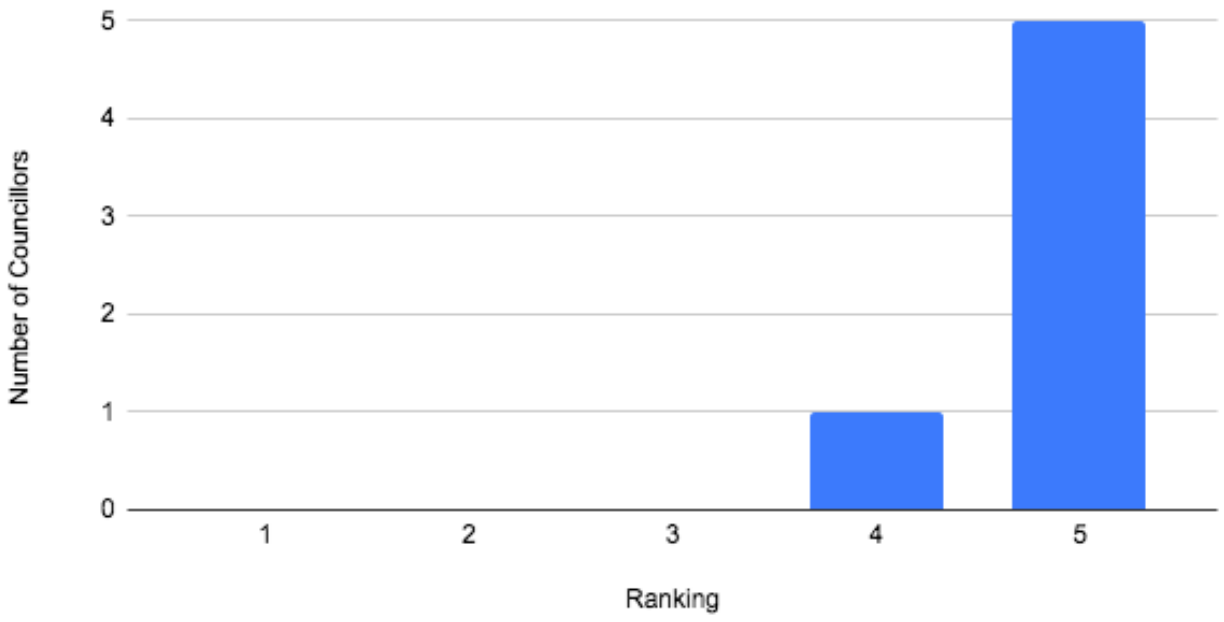

Figure 3D: Importance to Councilors of UVM investing in sustainable housing for students and faculty/staff. In this graphic, 5/6 of respondents are seen to have ranked this of utmost importance.

City Council is comprised of 12 councilors, of whom 6 ended up taking the survey. These six members offer insight into some of the political motivations present in the Burlington City Council committee, and may be slightly helpful in predicting how the course of Burlington's housing crisis may be altered by the wills of people who express interest in alternative housing endeavors. All councilors expressed in their responses that they would support the construction of an Eco-Dorm on UVM campus *(Figure 3A),* that they would indeed live in Burlington for an affordable price if presented with the opportunity *(Figure 3B),* and that they think UVM can effectively improve its sustainability performance by addressing student housing *(Figure 3C).* By and large, it was of rather high importance to the councilors that UVM invest in sustainable housing options for students and faculty/staff *(Figure 3D).* This view of political motivations within Burlington, if only representative of half of the total governing body, does provide Burlington with a shred of optimism in rerouting its current housing trajectory away from increased student encroachment towards a more accessible, sustainable community.

8.4 Community Members

Community members, otherwise classified as neighborhood residents, also represent a rather sizeable stakeholder population, with vested interested in the transitional dynamics of student housing given that their neighborhoods will be directly affected by any changes in UVM housing provisions. Of all total responses, 48 were completed by community members. This stakeholder group also provides some of the most valuable insights into the dynamics of the Burlington housing market, given that they have firsthand experience of the ways in which housing is priced, marketed, and utilized by tenants.

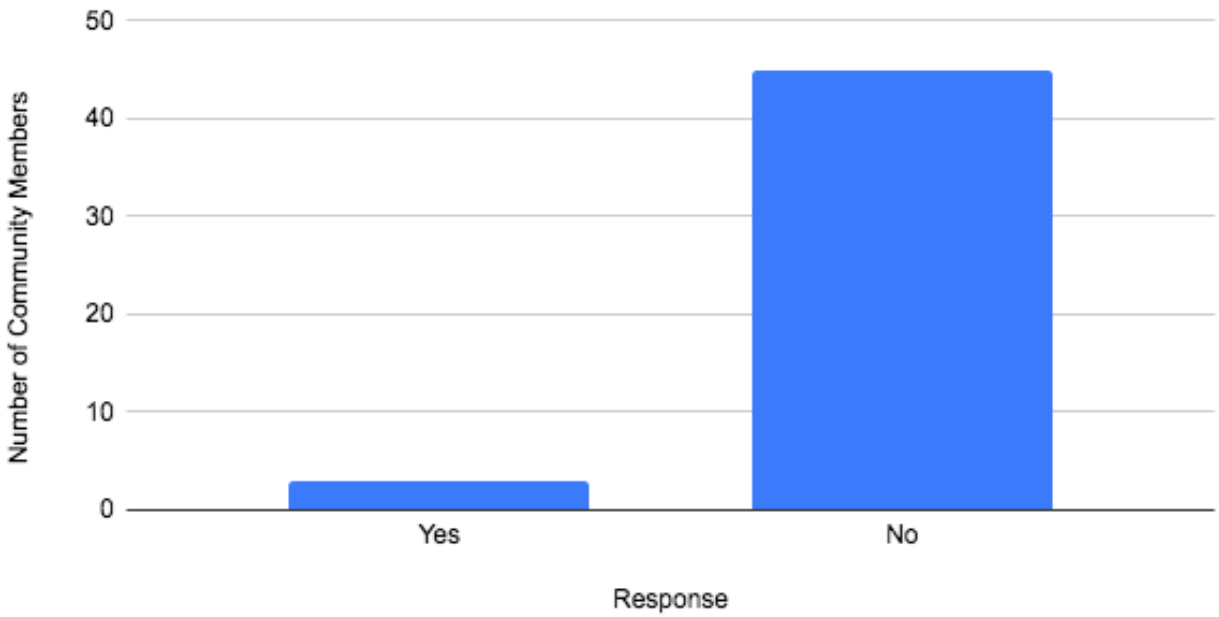

Figure 4A: Do community members think UVM provides housing to its students without encroaching on surrounding neighborhoods? By and large, respondents answered no.

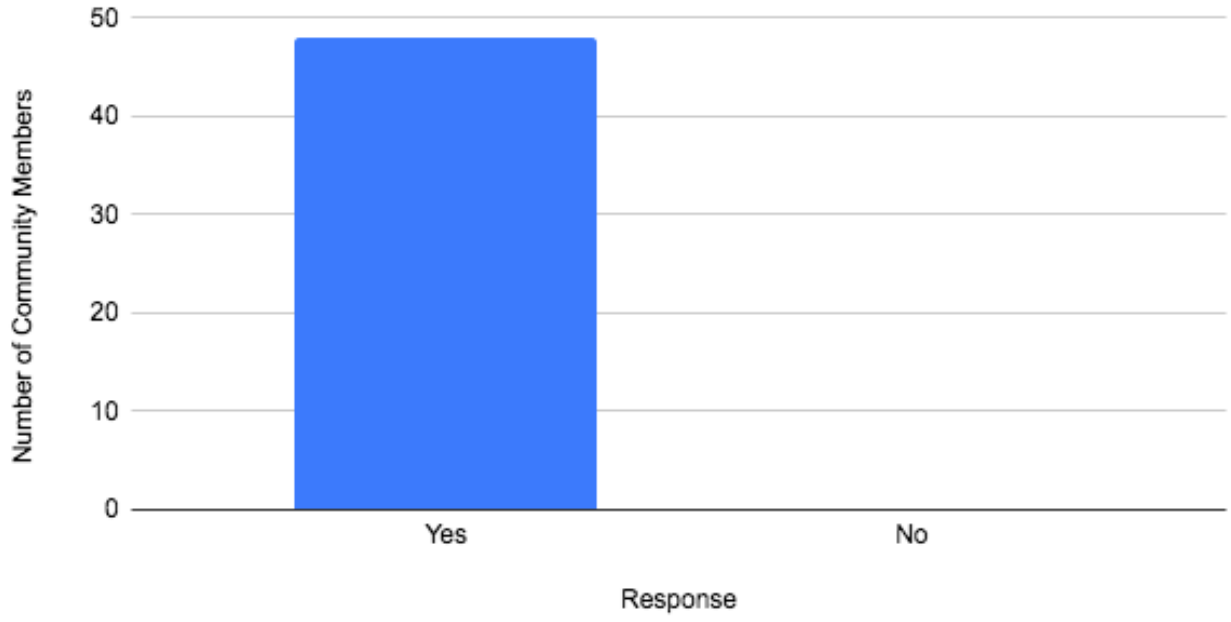

Figure 4B: Community members who think UVM can address its sustainability performance by addressing student housing. 100% of respondents answered yes, housing can address sustainability.

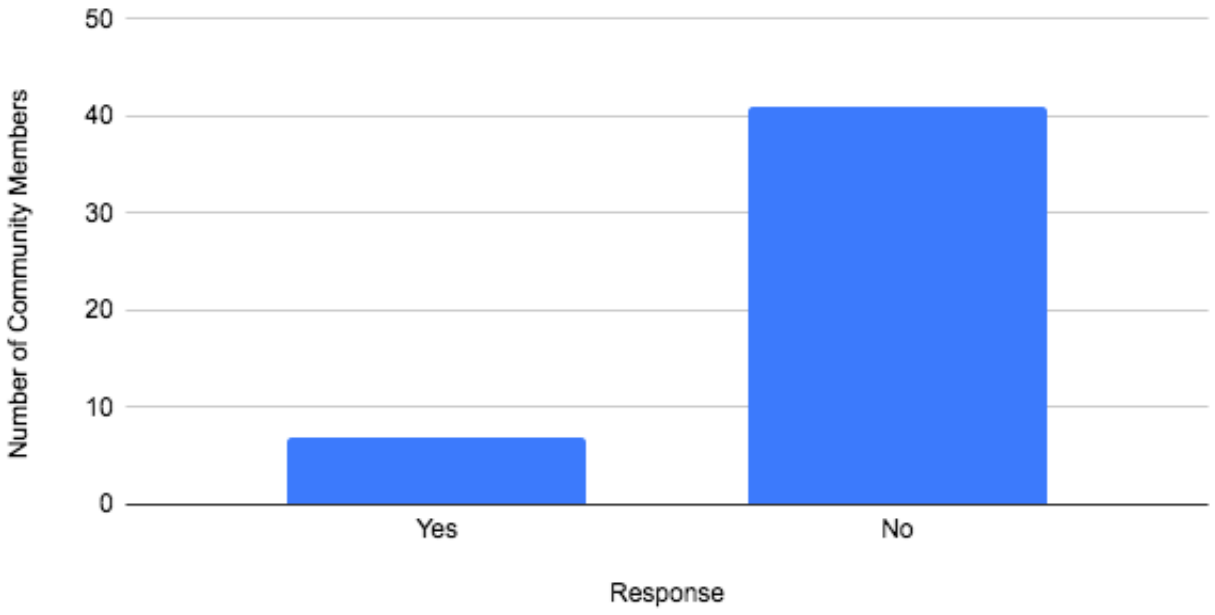

Figure 4C: Community member awareness of legal housing agreements between UVM and Burlington. Most participating community members were unaware.

Certain statistics showed high levels of unity in this target group. This was apparent where the vast majority of respondents believed that UVM is not pulling its weight in preventing students from encroaching on residential neighborhoods in Burlington by providing them with adequate housing *(Figure 4A)*, and that 100% of respondents agreed that UVM could effectively improve its sustainability performance by addressing student housing *(Figure 4B)*. Furthermore, 85.4% of residents claimed they were not aware of any legal housing agreements between UVM and the City of Burlington *(Figure 4C)*, suggesting that the lack of knowledge of existing agreements may in turn disempower community residents to claim back neighborhoods that have over the years become increasingly inaccessible to local workers due to expansion of student housing into neighborhoods surrounding campus driven by UVM.

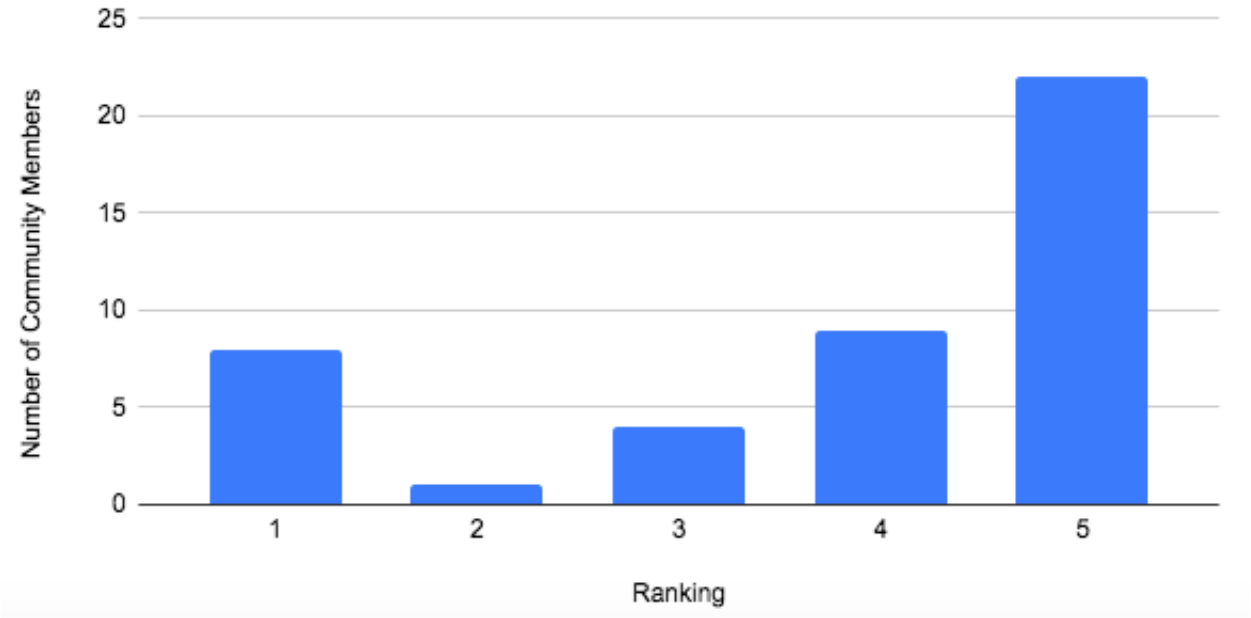

Figure 4D: How important is environmental stewardship to community members? Disparate responses provide mixed insights into conclusions that may be drawn.

While survey respondents within this stakeholder group tended to show similarity in their responses, when asked to rate how important environmental stewardship was to them, explicitly stating that 1 represented the least and 5 represented the most, the most frequently ranked number was 5, with almost half of respondents ranking as such *(Figure 4D).*

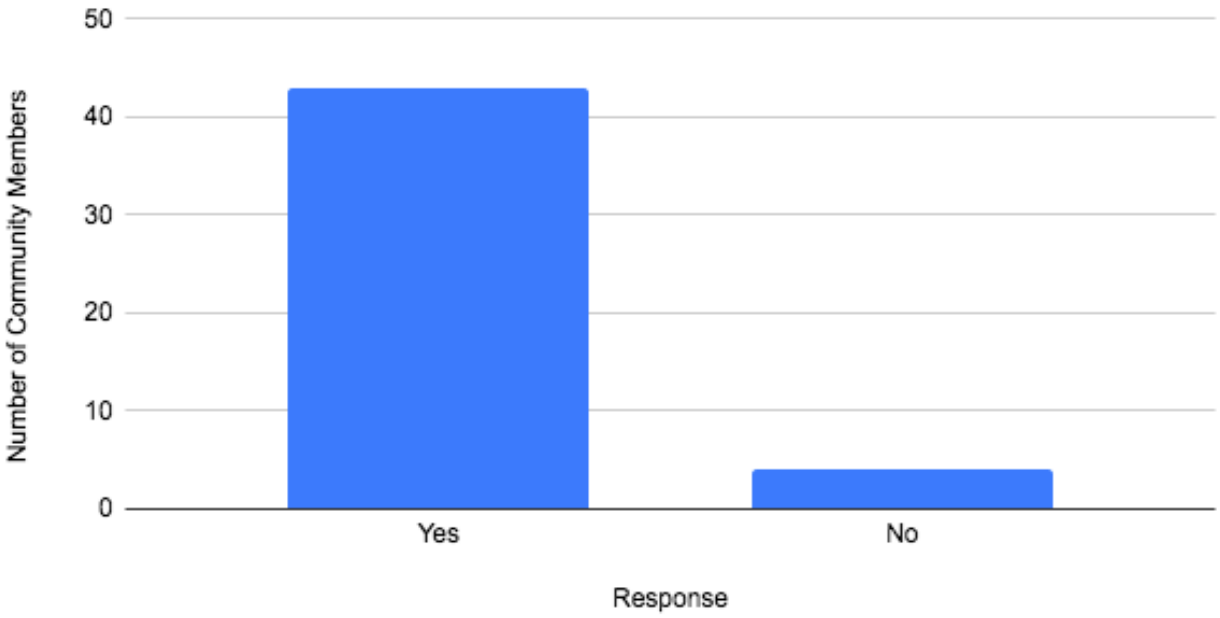

Figure 4E: Do community members think consolidation of student living spaces would have benefits to off-campus neighborhoods? Most participants indicate yes.

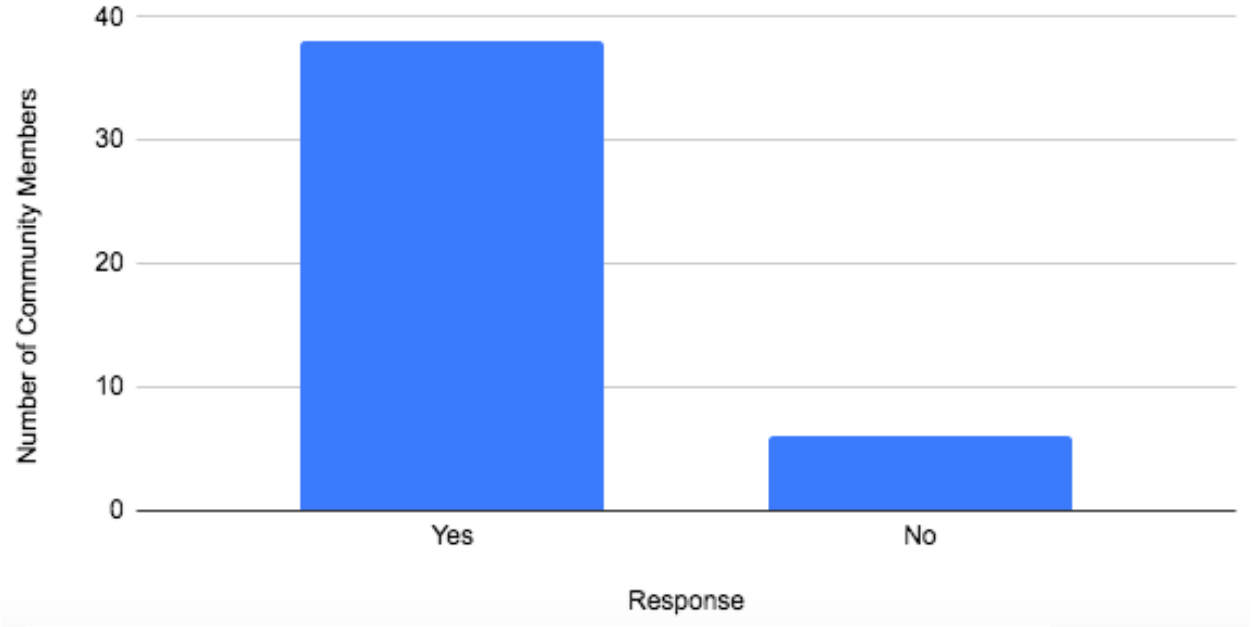

Figure 4F: Community member desire to see diversification of UVM housing options. Most participants are in favor of diversifying housing stock.

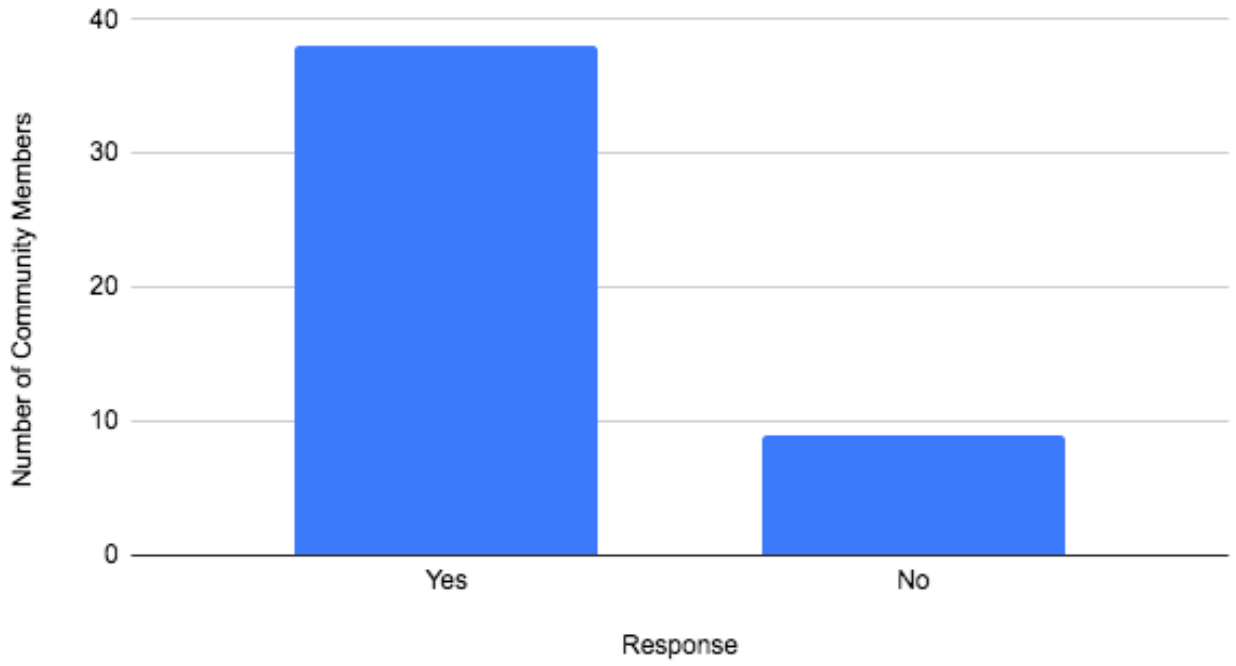

Figure 4G: Community member support of Eco Dorm construction. Most participating community members indicated their pledged support.

When asked whether they believed if consolidation of living spaces for upper class students would have positive effects for the neighborhoods surrounding campus, 91.5% of respondents answered yes *(Figure 4E).* 86.4% also declared they would like to see UVM diversify its housing options *(Figure 4F),* while 80.9% said they would support the construction of an Eco-Dorm on UVM campus *(Figure 4G).* While this may seem slightly contradictory, personal communications with community members who participated in the survey revealed that the nature of "supporting" the construction was unclear, expressing confusion as to whether support entailed financial, social, or political support.

8.5 Landlords

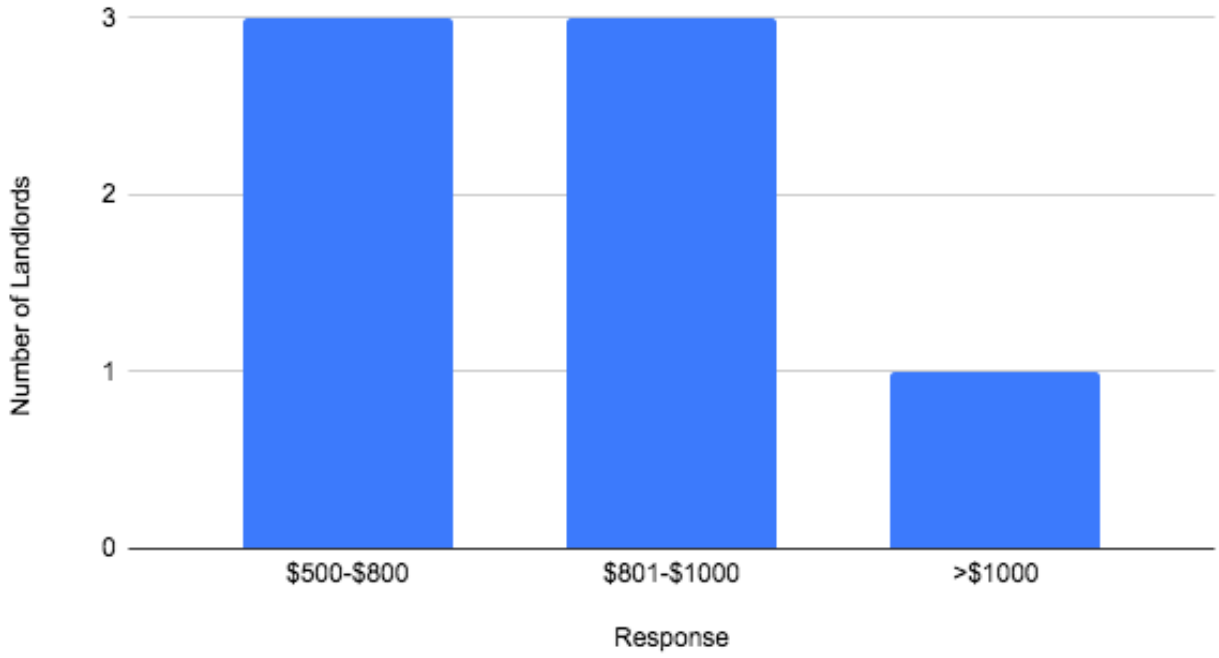

Figure 5A: Average monthly rate per tenant per property. Most landlords indicate either a rate of $500-$800 or $800-$1000.

While landlord participation was rather low, this actually exceeded my expectations I had prior to the study. Landlords included both property managements and individuals who hold smaller amounts of properties across Burlington than their corporate counterparts. Having acquired contact information either through personal interaction or through internet searches, I sent my survey to participants entirely over email. When asked how much the average rental rate per individual tenant was priced at the typical property of each landlord, respondents answered most frequently within the ranges of $500-$800 and $801-$1000, with three responses for each, and one exceeding $1000 *(Figure 5A)*. This may offer promising potential to the participation of students with the new student housing accommodation due to its proposed rental cost of $800/month.

Considering that equity is supposed to be enhanced through this housing initiative, $800/month may exclude some people from engaging in the housing environment. While this is to be avoided, I proposed $800/month as a rate that would be attractive to those coming from off-campus residencies priced at higher rates, or from UVM on-campus housing who may be seeking cheaper alternatives. It therefore may have been helpful to ask students in an open-ended manner on the survey what they would be willing to pay in order to live in such a housing environment.

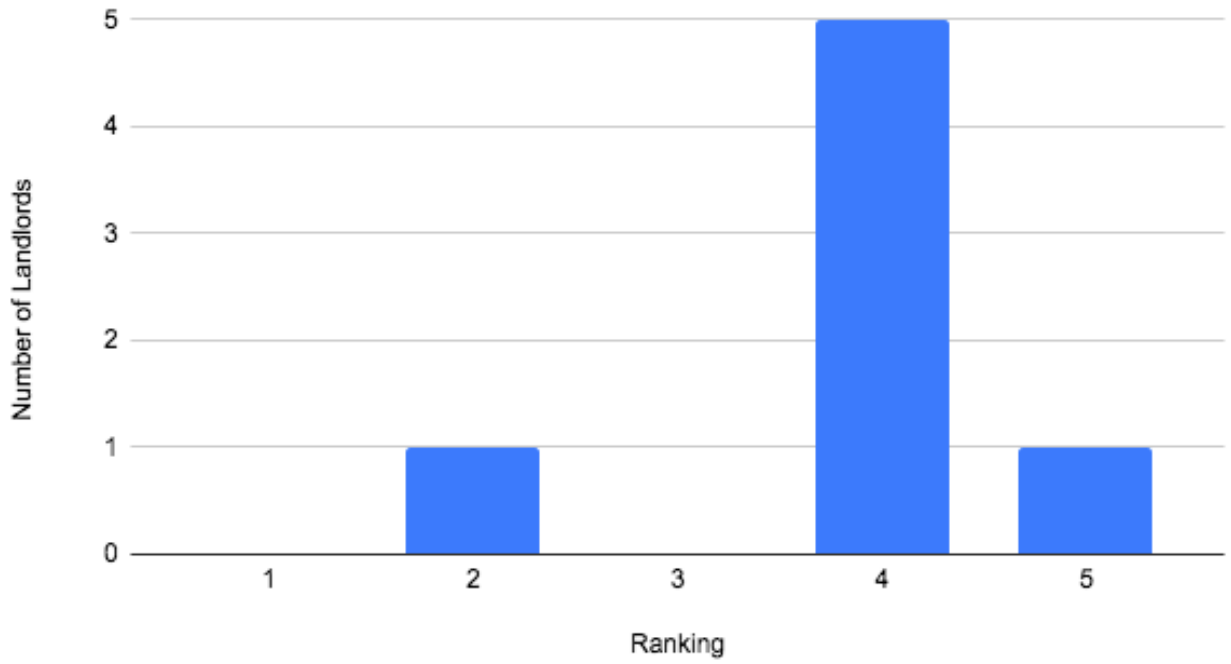

Figure 5B: How important is environmental stewardship to landlords? Most landlords indicate relatively high regard for environmental stewardship.

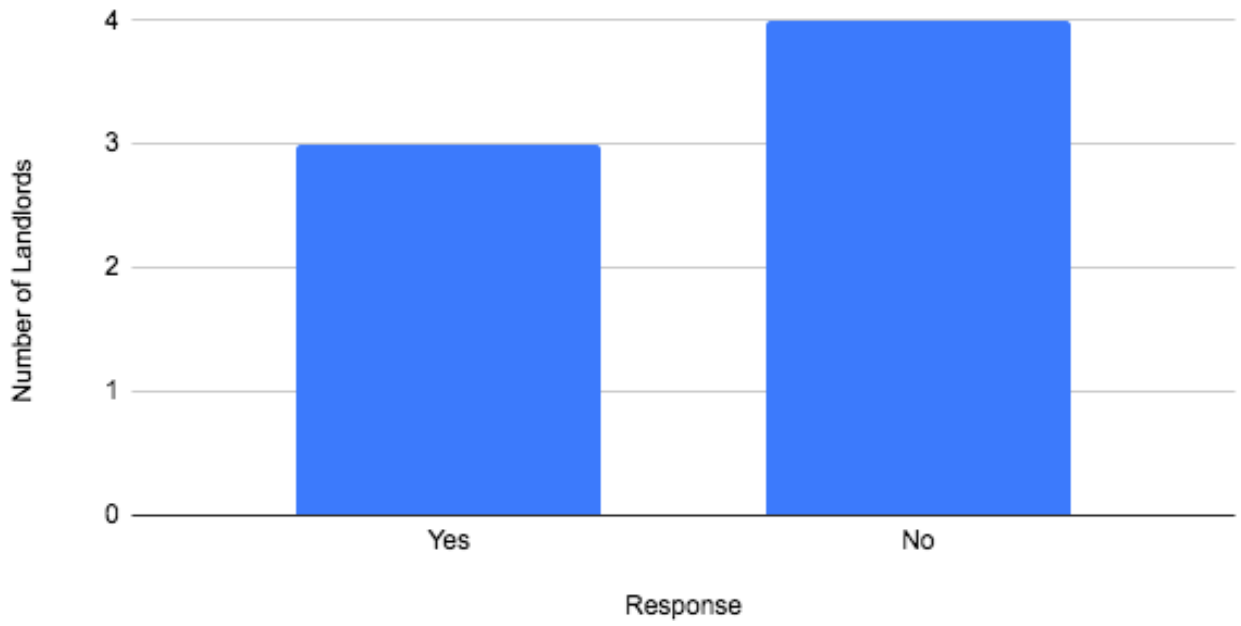

Figure 5C: Are landlords' properties operated under specific environmental standards? Most participating landlords say no.

While the majority of landlords (5) responded that on a scale of 1-5, they prize environmental stewardship at the score of 4 *(Figure 5B)*, 4 of 7 landlords also signified that their buildings are not operated under specific environmental standards *(Figure 5C)*, indicating room for improvement and the continued incapability of students to take their own course of action in leading more environmentally responsible lifestyles due to their dependence on housing accommodations that do not have stringent environmental regulations.

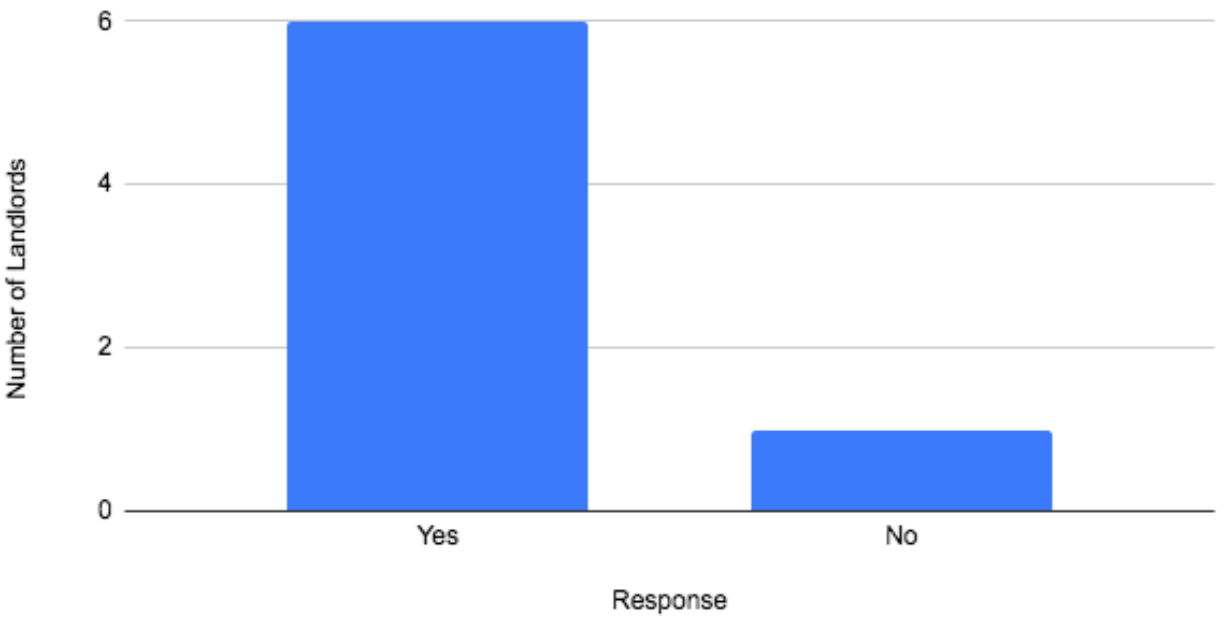

Figure 5D: Do landlords view student/community conflict as a primary concern of Burlington housing? Most participating landlords indicate yes.

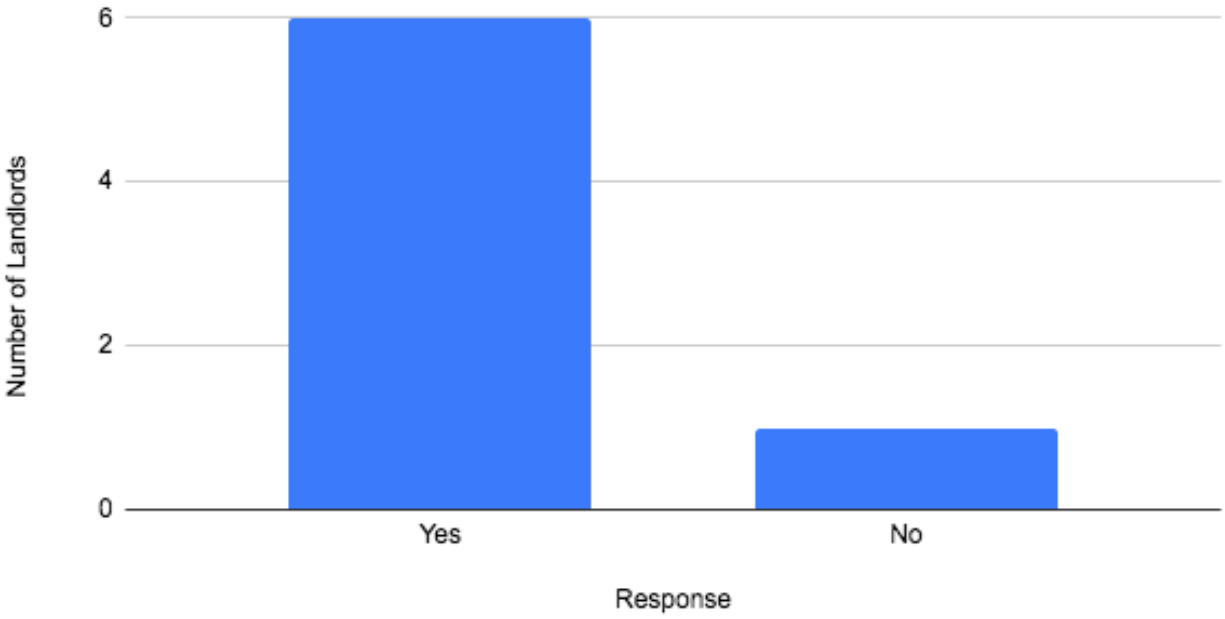

Figure 5E: Would landlords like to see UVM diversify its housing options? The majority of respondents indicated yes.

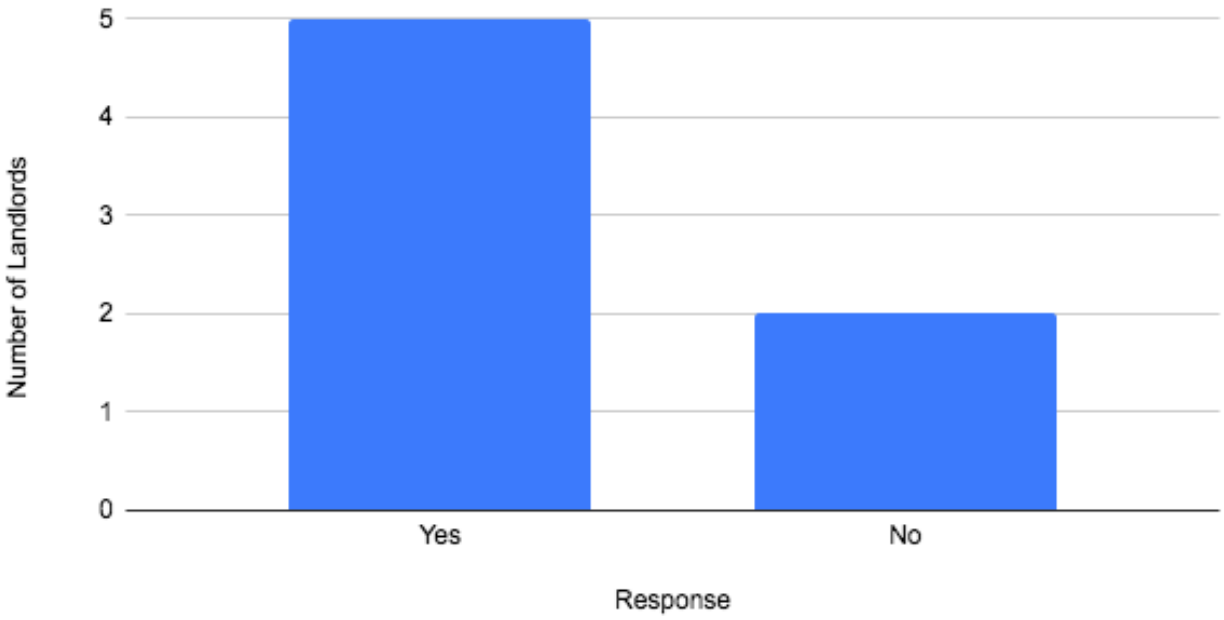

Figure 5F: Do landlords think consolidation of living spaces would benefit nearby neighborhoods? Most landlord respondents indicate yes.

Meanwhile, 6 of 7 indicated they both view student/community member conflict as a primary concern of housing in Burlington *(Figure 5D)*, and that they would like to see UVM diversify its student housing options *(Figure 5E)*. Furthermore, 5 of 7 specified that they indeed think consolidation of living spaces for upper class students would have positive effects for the neighborhoods surrounding campus, while only 2 said otherwise *(Figure 5F)*.

8.6 Significance of Findings

My survey findings can help inform the City of Burlington, residents of the communities of all walks of life and stakeholder categories, and most importantly UVM, its faculty, and student populations about the legitimacy of the proposed housing project, and the willingness that some of the community currently harbors to invest in a tangible sustainable housing solution. Overall, it appears as though UVM and Burlington communities strive to improve their sustainability

performance, and that individual acknowledgement of environmental stewardship opportunities, strategies, and necessity is rather heightened among research study participants.

As we see from data representations, there seems to be strong support across stakeholder groups that pledges to support the construction of the Eco-Dorm for UVM. This is encouraging information for the transformation of UVM's sustainability initiatives despite indicated support only coming from a handful of participants who comprise all the stakeholder groups. Without public support, such a project may be hard to implement, and the initiative for enacting such a project may not arise for a number of years at the university, if ever. The preliminary findings of this study not only signify that UVM's community is rather progressive and forward-thinking in respect to environmental stewardship and institutional accountability to climate action and social welfare, but it also indicates that there is a need to continue with this research in order to gain a more informed understanding of motives among UVM and Burlington communities that account for more individual people.

Of further importance is my finding that across stakeholder groups, there is a general sentiment that UVM is not doing enough to prevent its student housing needs from encroaching on the housing stock available in Burlington. This signifies a general attitude among study participants that subjects UVM to pressure to take accountability for the housing crisis it has largely helped to worsen in the city, and it also sheds light on the fact that the university's lack of action towards creating adequate student housing does not go unnoticed. This finding alone may serve as a valuable basis for driving the movement towards establishing greater diversification of housing options for UVM students that does not infringe on the needs of the larger Burlington

community, which may in turn have positive social and environmental effects for the rest of the city.

Questions left unanswered by the research thus far include how the influence of these community members, faculty, students, landlords, and City Councilors can help to push UVM towards achieving a more sustainable future that prizes a more just relationship with the many stakeholder groups that are inherently affected by its housing decisions. Revealing sentiments present within Burlington can help to reveal present motivations that help give credibility to the need for sustainable student housing provided by UVM as explained in the literary research of this study. Furthermore, the implications of this study remain uncertain as UVM would need to call into question how it chooses to prioritize its various development initiatives after expending vast amounts of money on new STEM and athletic facilities. These facilities, while potentially serving as an attracting force for new students to the university, do nothing to assuage current issues perpetuated by UVM's longstanding inaction concerning sustainable housing options.

9. Conclusions & Limitations

Building on the data I gathered for my thesis, there remains a great deal left to understand regarding the conditions, affordability, accessibility, and sustainability of housing in Burlington. UVM students' role as major stakeholders in the real estate market of Burlington is key to initiating a transition to sustainability in housing. Students have the capacity to drive city-level decision-making and investments of the university, to whom they annually pay large amounts of tuition dollars.

Considering the responses received from the survey participants across stakeholder groups, there appears to be relative similarity concerning topics that fall under the umbrella of student housing, including those related to prevalence of student conflict with community members, overall regard for the environment, and importance of students establishing relationships with those near whom they live in neighborhoods proximal to UVM campus. However, progress is still to be made in bringing these findings to light in the eyes of Burlington legislators with the power to enforce housing alternatives, and to the UVM administration in promoting more socially, economically, and environmentally sustainable housing alternatives for its students.

Further research may be taken up by future students, picking up where this research left off. In particular, it may be useful for future students to investigate the demographic implications that may result from the integration of students who would otherwise be living in the city's housing stock into alternative campus-supported housing. Shifts in the composition of social groups that currently populate the city's housing stock will be important to trace, ensuring that issues of inequitable housing accessibility, exclusion of socioeconomic or ethnic groups of people from housing opportunities, and more inflated rental rates do not become exacerbated but in fact alleviated by the movement of students and the freeing up of much of the space within the residential neighborhoods. Through this lens, the evolving nature of Burlington's community partnerships may be readily assessed, cooperation among residents of a variety of backgrounds may be improved and supported, and conclusions as to the nature of collective community resilience and cooperation in the face of future climate events may be deduced.

Along similar lines, it is important to assess the potential impacts that would take place if UVM was to offer subsidized housing to its faculty and staff who otherwise commute long distances to work. The subsidization of housing for faculty and staff would not only reduce carbon emissions from private transportation, but would also add a dynamic incentive for UVM to entice a portion of its off-campus student population into this proposed housing accommodation. By emptying part of the residential neighborhoods of students, faculty and staff along with their families would then be able to move into buildings previously used as apartments that were initially constructed as single-family homes.

Of further interest to future students may be investigating the carbon and monetary savings UVM may experience from the integration of sustainable housing accommodations into the university's active housing stock. By maintaining the same concrete goals for environmentally, economically, and socially sustainable housing at the university as detailed in this thesis, future students may be able to explore the energy savings that would result, and subsequently the avoided carbon emissions that would otherwise have resulted from conventional modes of energy production, housing operation, and mindsets among students who may not hold sustainability initiatives at the forefront of their housing interests.

A different layer of complexity is seen when considering UVM's recent pledge to divest from fossil fuels. Being applicable to the university as a whole, the divestment automatically has implications for all housing on campus, making them more environmentally sustainable and socially responsible. Divestment from fossil fuels still leaves a large void to be filled by other socially and environmentally responsible behavior on behalf of students and UVM. This may or

may not have gone unnoticed in respondents' answers to survey questions, and it would have been interesting to delve into this subject matter further.

There may have been undeterminable effects on the results of this project due to current events taking place within the Burlington community. For one, Burlington has had to confront the COVID-19 crisis, which in turn has disturbed student housing patterns for at least the Spring 2020, Fall 2020, and Spring 2021 semesters. Asking students to conceptualize hypothetical housing accommodations is rather difficult considering their own current experiences are heavily compromised, and that they may not even have a UVM experience that consists of traditional housing off which to base their judgements. Furthermore, the lack of face-to-face interaction in the gathering of data may have discouraged further people from participating in the research study, lowering the statistical basis of my work.

My study serves as a preliminary basis for gauging sustainable housing feasibility at a public institution, representing the first of many steps that need to be taken infrastructurally, socially, and politically in addressing the global climate change crisis from within UVM. In moving towards determining and launching mitigative and adaptive solutions to environmental degradation, proactive strategies must be formulated at all scales of communities, ranging between institutional, local, state, national, or global scales. Within a UVM context, it will remain of utmost importance to remind the administration of pathways through which the university can establish sustainable housing opportunities that in turn economically benefit UVM itself. Such pathways to achieving sustainability would also greatly bolster Burlington's and Vermont's momentum in achieving their climate action goals by addressing a number of inextricably linked social issues

that all somehow affect Burlington housing, including environmental concerns, stagnation in wages, and low housing supply. By addressing student housing through a lens informed by environmentalism and community concerns, UVM will be able to more appropriately deem itself a “green” institution that responsibly promotes the interests of global sustainability transitions on its own campus and within its student body.

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Appendix 1

Student Survey Questions

1. Do you live

   a) on-campus b) off-campus?

2. How much does your current housing cost per month?

   a) $500-800 b) $801-1000 c) >$1000?

3. Would you trade your current living accommodations for the living arrangement mentioned in the paragraph above? (off-campus students)

   a) Yes b) no

4. Would you want to one day reside in the living arrangement mentioned in the paragraph above? (on-campus students)

   a) Yes b) no

5. On a scale of 1-5, how important do you think it is that UVM invest in sustainable housing options for students (and faculty/staff)?

6. On a scale of 1-5, how do you think UVM is currently performing in terms of its sustainable housing endeavors?

7. Do you feel as though UVM on-campus housing is satisfactory?

   a) Yes b) no c) can't decide

8. Do you think UVM can effectively improve its sustainability performance by addressing student housing?

   a) Yes b) no

9. Are you aware of any legal agreements regarding housing between UVM and the City of Burlington?

   a) Yes b) no

10. Does congestion in downtown neighborhoods deter you in any way from owning a car?
    a) Yes b) no
11. Do you think UVM is pulling its weight in providing housing for students without encroaching on residential neighborhoods in Burlington?

a) Yes b) no

12. Are you interested in learning more about sustainability as related to institutional housing?
    a) Yes b) no
13. Do you think there is enough transparency regarding sustainability in different housing options at UVM?
    a) Yes b) no
14. Do you believe you have a moral responsibility in stewarding the environment in our era of climate change?
    a) Yes b) no
15. Would you like to see UVM diversify its housing options?
    a) Yes b) no c) no opinion
16. Do you feel as though your landlords are looking out for you in your off-campus housing? (off-campus students)
    a) Yes b) no
17. On a scale of 1-5, how would you rate your on-campus sense of community in your living environment? (on-campus students)
18. On a scale of 1-5, how would you rate your off-campus sense of community in your living environment? (off-campus students)

19. On a scale of 1-5, how important is it to you that students establish a relationship with the community members with whom they live? (off-campus students)
20. Do you perceive student/community member conflict as a primary concern of housing in Burlington?
    a) Yes b) no
21. Do you think consolidation of living spaces for upper class students would have positive effects for the neighborhoods surrounding campus?
    a) Yes b) no

Faculty/Staff Survey Questions

1. Are you a faculty or staff member of UVM?
    a) Faculty b) staff
2. Do you live within the residential communities of Burlington?
    a) Yes b) no
3. If given the opportunity to live in Burlington for an affordable price, would you?
    a) Yes b) no
4. On a scale of 1-5, how important do you think it is that UVM invests in sustainable housing options for students and faculty/staff?
5. On a scale of 1-5, how do you think UVM is currently performing in terms of its sustainable housing endeavors?
6. Do you feel as though UVM on-campus housing is satisfactory to its students?
    a) Yes b) no
7. Do you UVM can effectively improve its sustainability performance by addressing student housing?

a) Yes b) no

8. Do you think UVM is pulling its weight in providing housing for students without encroaching on residential neighborhoods in Burlington?

   a) Yes b) no

9. Are you aware of any legal housing agreements between UVM and the City of Burlington?

   a) Yes b) no

10. Would you support UVM funding the construction of the housing environment mentioned above?

    a) Yes b) no

11. Are you interested in learning more about sustainability as related to institutional housing?

    a) Yes b) no

12. Does congestion in downtown neighborhoods deter you in any way from owning a car?

    a) Yes b) no

13. Do you think there is enough transparency regarding sustainability in different housing options?

    a) Yes b) no

14. Do you think the university does enough to allow its students to make conscious choices regarding their environmental impact in their housing?

    a) Yes b) no

15. On a scale of 1-5, how important is environmental stewardship to you?

16. Would you like to see UVM diversify its housing options?

a) Yes b) no c) no opinion

17. Do you think consolidation of living spaces for upper class students would have positive effects for the neighborhoods surrounding campus?
    a) Yes b) no
18. Do you perceive student/community member conflict as a primary concern of housing in Burlington?
    a) Yes b) no
19. Do you believe you have a responsibility in stewarding the environment in our era of climate change?
    a) Yes b) no

City Council Survey Questions

1. Do you live within Burlington city limits?
    a) Yes b) no
2. If given the opportunity to live in Burlington for an affordable price, would you?
    a) Yes b) no
3. On a scale of 1-5, how important do you think it is that UVM invest in sustainable housing options for students and faculty/staff?
4. On a scale of 1-5, how do you think UVM is currently performing in terms of its sustainable housing endeavors?
5. Do you UVM can effectively improve its sustainability performance by addressing student housing?
    a) Yes b) no

6. On a scale of 1-5, how pressing do the obligations of UVM's housing agreement with BTV seem to you?
7. Would you support the funding of the construction of an “Eco-Dorm” on UVM campus?
    a) Yes b) no
8. On a scale of 1-5, how important is environmental stewardship to you?
9. Would you like to see UVM diversify its housing options?
    a) Yes b) no
10. Do you think consolidation of living spaces for upper class students would have positive effects for the neighborhoods surrounding campus?
    a) Yes b) no

Community Member Survey Questions

1. Do you think Burlington housing is provided at an accessible/affordable price?
    a) Yes b) no
2. On a scale of 1-5, how important do you think it is that UVM invest in sustainable housing options for students and faculty/staff?
3. On a scale of 1-5, how do you think UVM is currently performing in terms of its sustainable housing endeavors?
4. Do you think UVM can effectively improve its sustainability performance by addressing student housing?
    a) Yes b) no
5. On a scale of 1-5, how would you rate your off-campus sense of community in your Burlington neighborhood?
6. Do you know your neighbors in your off-campus neighborhood?

a) Yes b) no

7. Do you think UVM is pulling its weight in providing housing for students without encroaching on residential neighborhoods in Burlington?

   a) Yes b) no

8. Are you aware of any legal housing agreements between UVM and the City of Burlington?

   a) Yes b) no

9. On a scale of 1-5, how important is it to you that students establish a relationship with the community members with whom they live?
10. Does congestion in downtown neighborhoods deter you in any way from owning a car?

    a) Yes b) no

11. Would you support the funding of the construction of an "Eco-Dorm" on UVM campus?

    a) Yes b) no

12. Are you interested in learning more about sustainability as related to institutional housing?

    a) Yes b) no

13. On a scale of 1-5, how important is environmental stewardship to you?
14. On a scale of 1-5, how important is environmental stewardship to you?
15. Would you like to see UVM diversify its housing options?

    a) Yes b) no

16. Do you perceive student/community member conflict as a primary concern of housing in Burlington?

    a) Yes b) no

17. Do you think consolidation of living spaces for upper class students would have positive effects for the neighborhoods surrounding campus?

    a) Yes b) no

Landlord Survey Questions

1. How much is the average monthly rate for one of your properties (per tenant)?

    a) $500-$800 b) $800-$1000 c) >$1000

2. On a scale of 1-5, how important is environmental stewardship to you in the housing you provide?
3. Do you think about your personal environmental impact on a daily basis?

    a) Yes b) no

4. Are the buildings you own operating under specific environmental standards?

    a) Yes b) no

5. Do you think consolidation of living spaces for upper class students would have positive effects for the neighborhoods surrounding campus?

    a) Yes b) no

6. Do you perceive student/community member conflict as a primary concern of housing in Burlington?

    a) Yes b) no

7. Would you like to see UVM diversify its housing options?

    a) Yes b) no

Appendix 2

Student Data Tables

1A.

Factor Determining Move Off-Campus	Number of Students
Cost	14
Amenities	15
Freedom	39
Proximity to downtown	27
Living with friends	33
Off-campus more attractive than on-campus	34

1B.

Response	Number of Students
Yes	18
No	28

1C.

Response	Number of Students
Yes	12
No	2

1D.

Ranking	Number of Students
1	1
2	1
3	7
4	22
5	29

1E.

Ranking	Number of Students
1	4
2	13
3	37
4	6
5	0

1F.

Response	Number of Students
Yes	58
No	2

1G.

Response	Number of Students
Yes	17
No	42

1H.

Response	Number of Students
Yes	7
No	53

1I.

Response	Number of Students
Yes	5
No	54

1J.

Response	Number of Students
Yes	57
No	2

1K.

Response	Number of Students
Yes	17
No	30
Can’t decide	13

1L.

Ranking	Number of Students
1	2
2	8
3	22
4	9
5	4

1M.

Ranking	Number of Students
1	0
2	2
3	4
4	6
5	2

Faculty Data Tables

2A.

Response	Number of Faculty
Yes	18
No	4

2B.

Ranking	Number of Faculty
1	4
2	8
3	8
4	1
5	0

2C.

Ranking	Number of Faculty
1	0
2	0
3	3
4	5
5	14

2D.

Response	Number of Faculty
Yes	6
No	13

2E.

Response	Number of Faculty
Yes	19
No	1

2F.

Response	Number of Faculty
Yes	4
No	16

2G.

Response	Number of Faculty
Yes	6
No	16

City Council Data Tables

3A.

Response	Number of City Councilors
Yes	6
No	0

3B.

Response	Number of City Councilors
Yes	6
No	0

3C.

Response	Number of City Councilors
Yes	6
No	0

3D.

Ranking	Number of City Councilors
1	0
2	0
3	0
4	1
5	5

Community Member Data Tables

4A.

Response	Number of Community Residents
Yes	3
No	45

4B.

Response	Number of Community Residents
Yes	48
No	0

4C.

Response	Number of Community Residents
Yes	7
No	41

4D.

Ranking	Number of Community Residents
1	8
2	1
3	4
4	9
5	22

4E.

Response	Number of Community Residents
Yes	43
No	4

4F.

Response	Number of Community Residents
Yes	38
No	6

4G.

Response	Number of Community Residents
Yes	38
No	9

Landlord Data Tables

5A.

Response	Number of Landlords
$500-$800	3
$801-$1000	3
>$1000	1

5B.

Ranking	Number of Landlords
1	0
2	1
3	0
4	5
5	1

5C.

Response	Number of Landlords
Yes	3
No	4

5E.

Response	Number of Landlords
Yes	6
No	1

5F.

Response	Number of Landlords
Yes	5
No	2